Ecological Influences of Parental Discipline Behaviors and Child Outcomes among Families in Low- and Middle-Income Countries

by

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DEDICATION

To my grandmother, Dr. Helene M. Hoover.

Thank you for your example and continuous inspiration.

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ABSTRACT

Children living in low- and middle-income countries (LMICs) are disproportionately at-risk for failing to meet their developmental potential. Meeting important social, behavioral, and cognitive milestones in childhood sets the stage for healthy development across the lifespan. More research is needed to determine how to leverage the rich population heterogeneity, cultural diversity, and strengths found in LMICs, while reducing risks to child development. Parental discipline behaviors have the potential to both promote and hinder child outcomes across the world. However, relatively little research has examined how parental discipline behaviors interact with contextual factors to predict child outcomes in LMICs. Leaning on family stress and bioecological theories, this dissertation examined how contextual factors (i.e., country, child age, country-level human development, and country-level gender inequality) shaped the associations between aggressive and non-aggressive parental discipline behaviors with child aggression, distraction, and prosocial behavior.

Data came from rounds four (2009-2013) and five (2012-2017) of the United Nations Children's Fund Multiple Indicator Cluster Surveys. First, nationally representative prevalence estimates of 11 parental discipline behaviors were estimated across 58 LMICs. Next, Bayesian multilevel logistic regression analyses were conducted to examine the associations between 11 parental discipline behaviors with child outcomes, and whether the strength of these associations varied by country. Finally, traditional frequentist multilevel logistic regression analyses examined whether the associations between parental discipline behaviors and child outcomes varied by child age, country-level human development, and country-level gender inequality.

Results suggest that physical aggression, psychological aggression, and taking away privileges were harmful to child developmental outcomes, while verbal reasoning and redirection were helpful. Refraining from physical and psychological aggression were most important in countries with lower human development and higher gender inequality, whereas verbal reasoning and redirection were most important in countries with higher human development and lower gender inequality. Results underscore the need for cross-functional and multilevel interventions in LMICs to promote child socioemotional development.

CHAPTER 1

Introduction

Developmental outcomes in childhood play a key role in determining developmental trajectories across the lifespan (Black et al., 2017). Meeting social, cognitive, and behavioral milestones in childhood allow children to have better peer interactions, healthy dating experiences, improved mental health outcomes, and thrive in educational and occupational settings (Baharin et al., 2020; Ju & Lee, 2018). The developmental outcomes of children also partially determine society's overall wellbeing (Daelmans et al., 2017). When children fail to meet important developmental milestones, serious consequences occur at local and national levels. For example, findings suggest that poor cognitive development early in life prevents children from gaining the full benefits of formal education, which can eventually lead to outcomes such as decreased productivity and higher unemployment in the longer term (Baharin et al., 2020; Wambugu, 2011). Similarly, aggressive behavior and maladaptive peer interactions in childhood have been linked to outcomes such as criminal activity, substance abuse issues, and early sexual debut in adulthood (Pepler & Rubin, 1991; Walters, 2020). Rigorous research examining the economic implications of suboptimal development in childhood suggest the monetary cost is high—for example child aggression problems exceed a cost of $70,000 USD per child in the U.S. alone (Foster & Jones, 2005). Ensuring children's optimal development is not only financially beneficial, but also improves the overall wellbeing of individuals and society at large. Therefore, investment in children's development across the globe is important to pursue.

Research suggests that, compared to those living in high-income countries, children living in low- and middle-income countries (LMICs) are disproportionately at risk for not meeting their developmental potential. Current estimates show that over 250 million children under five in LMICs are not meeting their developmental potential due to factors such as violence, poverty, poor living environments, and suboptimal learning opportunities (Black et al., 2017). Economists suggest many of these risk factors have roots in the legacy of colonial exploitation, where Western European colonizers relied on indigenous populations as an exploitable resource to gain access to land; extensively used slaves for crop production; and set up extractive institutions where Native populations were removed from participation in political and economic affairs (Engerman & Sokoloff, 2002; Nunn, 2008).

Other researchers have noted that slave trade has been particularly detrimental to social and economic development in LMICs, where free individuals were captured by forceful manners such as kidnapping, warfare, pawning, state-organized raids, and threat of firearm use (Inikori, 1992; Miller, 1988). Further, the increase in the Atlantic slave trade was followed by the expansion of the African slave trade, which resulted in weakened native institutions and a halted socioeconomic development (Inikori, 2000; Manning, 1981). Finally, researchers have noted the role of geography and disease in the worsening of outcomes for individuals in LMICs. Because Western Europeans primarily relied on sedentary agriculture and animal domestication, they developed an immunity to many communicable diseases—the same diseases which would eventually kill many indigenous populations after colonization occurred (Bhattacharyya, 2016). Further, diseases such as Malaria tend to be more deleterious in tropical environments and are more difficult to eradicate with political and medical institutions that were weakened due to the explicit exclusion of indigenous populations (Gallup & Sachs, 2001).

Yet, despite these exploitive legacies and origins, there are numerous strengths found in low- and middle-income countries that can support children's development. Many LMICs have tight-knit communities that provide social and parental support (Holzmann, 2010). Further, there are numerous LMIC governmental commitments to ending violence against women and children (UNCRC, 2011), some of which are stronger and more protective of human rights than those in higher income countries. Further, many LMICs have monetary dedication to supporting educational attainment (Snilstveit et al., 2016) and offer a variety of cultural and spiritual values that center on supporting child development and behavior (Mascayano, 2020). Low- and middle-income countries are incredibly diverse in population, income, geographic size, cultural practices, and resource distribution (World Bank, 2020), and therefore provide an important setting in which to understand contextual influences of child development.

To improve both individual and societal wellbeing and ensure long-term social and economic equity across countries, more research is needed on the factors that increase the likelihood of these young children meeting their developmental potential. To this end, researchers need to explore how to leverage the strengths found within low- and middle-income countries and minimize risk and oppressive factors. This dissertation maintains a primary focus on one aspect of a child's living environment that can make a substantial impact on their developmental trajectory: parental discipline behaviors.

Parental Discipline Behaviors in Global Context

For several decades, parenting has been recognized as one of the most important global public health issues (Hoghughi, 1998). Discipline, which is defined as the verbal or behavioral means by which caregivers control or correct undesired child behavior (Lansford, 2019), can serve as the foundation by which children learn how to function in adult societies. For example,

parental modeling and promotion of correct behavior promotes children's moral development, and can prevent child misbehavior from occurring (Lansford, 2019; Pinquart & Fischer, 2021). Further, helping children understand correct behavior promotes child empathy and positive peer relations (Krevans & Gibbs, 1996). On the other hand, correcting a child's behavior through aggressive means such as slapping, hitting, and yelling has been shown to harm children's cognitive development and increase child aggressive and antisocial behaviors (Gershoff & Grogan-Kaylor, 2016a; MacKenzie et al., 2013; Straus et al., 1997). Therefore, for better or for worse, parental discipline shapes children's developmental trajectories.

Of course, the conditions under which parental discipline behaviors occur vary greatly. While some individuals receive the opportunity to parent their children with the support of a strong interconnected community and substantial financial resources, others are forced to parent in under-resourced environments and high-conflict communities. While the effects of parental discipline behaviors alone on child outcomes have been well explored (Gershoff & Grogan-Kaylor, 2016a; Quail & Ward, 2020; Wolf & Suntheimer, 2020), the joint effects of parental discipline behaviors *and* contextual influences on child outcomes is less understood— particularly in LMICs.

Low- and middle-income countries are rich in cultural, population, and resource diversity, and also exhibit some common challenges. Research suggests that LMIC governments tend to be focused on addressing basic needs such as increasing water access, improving education systems, and reducing crime and high levels of extreme poverty (Mejia et al., 2017). Further, on average, parents in LMICs experience greater difficulties obtaining employment, attaining quality education, and earning enough money to support the health and wellbeing of their families compared to parents living in higher income countries (Mejia et al., 2017; Richter

et al., 2017). High levels of poverty and economic stress have been shown to present substantial risks for parenting, including heightened parental depression and increased risk of child maltreatment (Britto et al., 2017; Engle et al., 2011).

Beyond these economic difficulties, gender inequality gaps favoring men are systemically larger in LMICs. Gender inequality is defined as the lack of equal rights, resources, opportunities, or protection among men, women, boys, or girls (UNICEF, 2019a). In low- and middle-income countries, men attend college at much higher rates than women; the ratio of the male-to-female labor force participation is elevated; rates of gender-based violence are higher; and female life expectancy is lower (Jayachandran, 2015). Such gender inequality has been attributed to factors such agricultural-based labor force participation (Galor & Weil, 1996), lack of technological progress in the home (Greenwood et al., 2005), maternal mortality and maternal morbidity due to stifled medical progress (Jayachandran & Lleras-Muney, 2009), the cultural practice of patrilocality (i.e., a married couple living with the husband's parents) which results in greater financial investment in sons, and cultural concerns about female safety and "purity" (Buss, 1989). Despite these social and economic challenges, many LMICs are making notable strides toward gender equity and economic empowerment, which likely benefit both parents and children. Thus, in order to understand the relationship between parental discipline behaviors and child socioemotional outcomes in LMICs, a multilevel approach must be taken, where the joint influences of the micro- and macrosystems are considered.

Some studies that examine parenting in higher income countries suggest that the association between aggressive parenting behaviors and child outcomes is largely consistent across contexts—including race, economic hardship, age, and neighborhood (Gershoff & Grogan-Kaylor, 2016b; Grogan-Kaylor et al., 2020; Kotchick & Forehand, 2002; Lee et al.,

2020). However, developmental theory would suggest that, when living in lower-resourced

contexts, the influence of broader systems and social inequalities may have a greater influence

on child development (Bronfenbrener & Morris, 2006; Coll et al., 1996). Specifically, the

bioecological model posits that the power of contextual processes to buffer developmental

dysfunction will be stronger in disadvantaged countries compared to countries that have greater

financial advantages (Bronfenbrenner & Morris, 2006; p. 819). Leaning on the rich heterogeneity

and diversity found in low- and middle-income countries, this dissertation aims to explore the

use of parental discipline in low-resourced settings, as well as how contextual factors shape the

relationship between parental discipline behaviors and child outcomes among families in LMICs.

It is anticipated that such exploration will unveil the dynamic transaction of context and

individual development, and help practitioners and policymakers understand how to better

promote child development in LMICs. The specific aims of the dissertation are as follows:

Aim 1: Establish the prevalence rates of parental discipline behaviors across low- and

middle-income countries.

Aim 2: Examine the relationship between parental discipline behaviors and child

socioemotional outcomes across low- and middle-income countries.

Aim 3: Examine whether proximal processes (i.e., person-environment interactions)

involving parental discipline behaviors relate to child socioemotional outcomes across low- and

middle-income countries.

Theoretical Frameworks

This dissertation is grounded in multiple theoretical frameworks, one of which being

Bronfenbrenner's bioecological model of human development (Bronfenbrenner, 1989;

Bronfenbrenner & Morris, 2006). The bioecological model places the child within a series of

nested systems, some with which the child has direct contact (e.g., school, neighborhood, church, peer group, healthcare settings) and some indirect contact (e.g., industry, media, politics, attitudes, culture). The model posits that human development occurs via *proximal processes*—or the interaction between the child and these various systems—occurring across time. These systems are categorized into five parts: the microsystem, mesosystem, exosystem, macrosystem, and chronosystem.

The microsystem includes individuals with which children have direct contact on a regular basis over an extended period, such as parents, teachers, and relatives. When interactions occur between two or more settings that include the child, such as between home and school, a mesosystem is formed. On the other hand, when interactions occur between two or more settings, but at least one setting does not include the child, an exosystem is formed. Then, when micro-, meso-, and exosystems create patterns that make up cultures and subcultures and include bodies of knowledge, lifestyles, and belief systems, a macrosystem is formed. The final system, the chronosystem, refers to the passage of time, and can include the child's age, historical time period, cohort, and changes in environmental factors across time. The bioecological model is perhaps the most comprehensive framework from which to explore person-in-environment interactions and is readily applicable to a global context. Although the bioecological model does outline some specific hypotheses that would support or fail to support the model, the bioecological model most often serves as a broad framework from which scientists can formulate research questions and inform analytic approaches.

The family stress model (FSM; Conger et al., 2010) provides a specific, testable statistical model that aims to explain how contextual economic factors influence child outcomes. The FSM posits that economic hardship experienced by parents engenders a psychologically

distressing sense of economic pressure, which results concomitantly in parental mental health challenges and marital conflict. These mental health challenges and high levels of conflict directly predict harsh parenting, which then results in poor child socioemotional development (Conger et al., 1993; Conger & Conger, 2002). Importantly, the FSM was originally developed for predominantly White low-income U.S. families living in rural communities (Conger et al., 1994). Since its conceptualization, the FSM has been applied to Mexican American families (Parke et al., 2004), African American families (Gutman et al., 2005), immigrant families (Saasa et al., 2021), families living in high-income countries (Linver et al., 2002) and low-income families living across the United States (Lee et al., 2022; Lee et al., 2021). However, the FSM has not been thoroughly applied to the global context, and only a few studies have utilized the FSM in low- and middle-income countries (Beatriz & Salhi, 2019; Huang et al., 2017; Jeong et al., 2017). This dissertation leans on the breadth of the bioecological model and specificity of the family stress model to understand how the proximal processes involving parental discipline influence child socioemotional development in a global context—specifically in LMICs. Because the original conceptualization of these theoretical frameworks was U.S.-centric, it is important to consider both the strengths and unique challenges that are present in low- and middle-income countries. The following sections will delineate the factors at the macrosystem and chronosystem levels that are important to consider in LMICs.

Macro-Level Economic and Social Development

The family stress model's focus on the impact of economic stress on child outcomes is appropriate for the study of low- and middle-income countries, considering the centrality that fiscal equity has on the wellbeing of the inhabitants of these settings. Empirical findings from the United Nations Children's Fund (UNICEF, 2019b, 2021) suggest that the performance of the

macroeconomy is highly related to child wellbeing through a number of mechanisms including the job market (which affects income), price levels (which affects cost of living), and fiscal balance (which affects availability of social services). At the macro level, the macroeconomy determines the number of resources that can be dedicated to social services and social protection, which has direct implications on child physical and mental health (UNICEF, 2021b). At the micro level, low-performing labor markets do not provide the quality jobs that parents need to improve the lives of their children—without adequate pay, working parents have trouble responding to their children's nutritional, cognitive, and social needs (UNICEF, 2019b).

Whereas the family stress model and UNICEF (2019) conceptualize economic stress as a predictor of child outcomes via mediating mechanisms, the bioecological model (Bronfenbrenner & Morris, 2006) would suggest that the macroeconomy likely *interacts* with aspects of the microsystem, which then predict child outcomes. In other words, the family stress model may fail to capture important multilevel *proximal processes* that may occur between country-level economic stress and parenting. For example, low performing macroeconomies and high levels of economic inequality may make it difficult for children to thrive developmentally, regardless of parenting; alternatively, parenting may be more strongly associated with child development when living in countries with less economic and social stress. Indeed, Bronfenbrenner and Morris (2006) posit that: "the power of proximal processes to buffer genetic potentials for developmental dysfunction will be greater in disadvantaged and disorganized environments than in those that are advantaged and stable" (p. 819). Using this same logic, the power of parenting to buffer potential for developmental dysfunction may be greater in countries with higher economic stress.

When considering the impact of the macroeconomy on child development in low-resourced contexts, UNICEF (2021a) has proposed that researchers make use of multidimensional measures. For example, instead of relying solely on monetary measures of the macroeconomy, UNICEF suggests that researchers use measures that encompass the multidimensional nature of poverty and economic stress in low- and middle-income countries. As UNICEF (2021a) states, "While assessing monetary poverty is essential, gauging progress in poverty eradication by reference to monetary poverty alone fails to capture the deprivations experienced by a large segment of societies living in multidimensional poverty, deprived of their basic rights regardless of income status" (p. 31). One multidimensional measure that UNICEF recommends is the Human Development Index.

The Human Development Index (HDI) was created in 1990 by the United Nations Development Programme to monitor global social and economic development. The HDI provides a wholistic view of a country's functioning, as it takes three key dimensions of human development into consideration: life expectancy at birth, years of education, and per capita income (gross national income [GNI]). Whereas the family stress model tends to focus on monetary measures of economic stress, exploring the effects of HDI may provide a more well-rounded picture of a child's living environment in LMICs. For example, the HDI has been able to explain why children in two countries with the same GNI can have vastly different developmental outcomes (United Nations Development Programme, 2021a). The life expectancy portion, or the average age of death in a given population, is meant to capture whether individuals living within a particular country can expect to have greater longevity. The education dimension is calculated using the average years of schooling for adults over 25 years of age and the expected years of schooling for school-aged children. Finally, the GNI, which is calculated

via the sum of a country's gross domestic product (GDP) and net income from overseas, is meant to capture a country's standard of living. Data for these three dimensions are gathered from databases such as the UN Population Division, the World Bank, and UNESCO Institute for Statistics.

In 2010, the Inequality-Adjusted HDI (IHDI) was introduced, which adjusts for inequality in the distribution of each HDI dimension (i.e., life expectancy, education, and income). The IHDI is calculated as a geometric mean of inequality-adjusted indices. In other words, the IHDI "discounts" each dimension's average value according to its level of inequality. Inequality is measured using a distribution-sensitive class of composite indices calculated by Foster and colleagues (2005) as well as the Atkinson (1970) family of income inequality. The United Nations Development Program notes that these measures of inequality have several advantages over more traditional measures of inequality, such as the Gini coefficient. Namely, the IHDI demonstrates subgroup consistency (i.e., ability to capture inequality declining in subgroups, as opposed on solely the population as a whole) and is sensitive to inequality at the lower ends of the distribution (United Nations Development Programme, 2021b). First, inequality within each dimension (i.e., life expectancy, education, and income) is calculated; then, inequality across all dimensions is calculated. This results in a mathematically elegant country-level composite measure that ranges from 0-1, with higher values indicating higher human development, after adjusting for inequality. Under perfect equality, the HDI and IHDI will equal one another; however, when inequality rises, the IHDI value will fall below the HDI.

Research suggests the HDI is an important predictor of a range of child outcomes. For example, among children aged 9-11 years across 12 countries, HDI was associated with health-related quality of life and greater physical activity (Dumuid et al., 2018). HDI is also associated

with child health-related services, including psychiatry and mental health services (Sourander et al., 2018). Further, a recent study of over 150,000 children across 51 LMICs indicates that higher HDI predicts greater child literacy, numeracy, and socioemotional development. In fact, in this same study, HDI explained 16% of the variance in children's socioemotional outcomes (Bornstein et al., 2021). When comparing the HDI and the IHDI across 145 countries, Ruiz and colleagues (2015) found that the IHDI was a better predictor of both infant and maternal mortality, suggesting that inequality is an important predictor of health status. Supporting this suggestion, another study (van den Heuvel et al., 2013) found that policies that increased country-level IHDI had a positive influence on the social determinants of early child development. While the HDI and IHDI have been examined as direct predictors of the child outcomes mentioned above, it is possible that a proximal process could occur between country-level human development and parental discipline behaviors. That is, the benefits of nonaggressive discipline on child development might be even greater in countries where the IHDI is higher, and the detrimental effects of aggressive discipline on child development might be even greater in countries where IHDI is lower (Bronfenbrenner & Morris, 2006).

Although low- and middle-income countries have fewer financial resources than higher-income countries, individuals, organizations, and governmental agencies in many LMICs are dedicated to social justice issues and improving the wellbeing of their vulnerable populations, sometimes more so than their higher-income counterparts. For example, while all LMICs have ratified the Convention on the Rights of the Child, which outline the political, civic, cultural, economic, and social rights of children (UNCRC, 2011), the United States has not. Further, there are many governments in LMICs that have implemented programs for women's economic empowerment, which have emboldened many women and families, especially in rural

communities. For example, in Bangladesh, the cash-based Rural Maintenance Programme provides year-round work to poor women who help maintain rural earthen roads (Devereux & Solomon, 2006). In Indonesia, the Padat Karya program uses community-based approaches to generate labor-intensive jobs for women that has resulted in improved village roads, schools, and irrigation channels (Devereux & Solomon, 2006). Such social justice commitments may benefit parents and children considerably in LMICs, despite these families living in countries with lower gross national incomes (GNIs). This dissertation aims to explore both the stressors and strengths exhibited in LMICs, and how these contextual factors either hinder or promote key child developmental outcomes.

Gender Inequality in Low- and Middle-Income Countries

Gender inequality is another important contextual issue that is a well-established predictor of child developmental outcomes. In LMICs, the effects of gender inequality may not be seen immediately—in fact, on average, girls have a higher birth survival rate and are more likely to be developmentally on track in early childhood (UNICEF, 2021c). However, once girls enter the school system, they are less likely to receive educational support than boys and are less likely to regularly attend class due to hygiene and sanitation concerns (Jewitt & Ryley, 2014). Further, once girls reach adolescence, they are more likely to experience unwanted pregnancy, malnutrition, genital mutilation, and unwanted marriage (Rafferty, 2013).

Gender inequality in adulthood can manifest itself in physical, psychological, sexual, and economic violence against women. Global estimates suggest that approximately 33% women experience violence in their lifetime; however, among women living in the poorest countries, this estimate rises to between 37-51% (World Health Organization, 2021). In LMICs, frequent forms of violence against women include domestic and intimate partner violence, sexual assault, and

female genital cutting (Grose et al., 2021). Beyond the well-established mental health and emotion burden such acts place on women (Seff & Startk, 2019), this violence bears significant economic burdens, including high health care costs and decreased productivity; in fact, these economic burdens tend to be the highest in the poorest countries (Vyas et al., 2021). Such violent and inequitable treatment prevents women from being able to participate in the labor market, be involved in parliament and government activities, and strive for higher educational attainment (Klasen & Lamanna, 2009). While gender inequality is particularly detrimental to women, gender inequality is also harmful to men. Social constructions of masculinity have been shown to be associated with higher gang violence, recruitment into armed groups, and increased child labor (Deuchar & Weide, 2017; UNCIEF, 2021c).

The World Health Organization has warned that gender inequality is a salient risk factor for child maltreatment (Runyan et al., 2002). Indeed, a recent study examining over 50 LMICs found that gender inequality (measured with the Gender Inequality Index) was associated with greater odds of physical abuse and child neglect (Klevens & Ports, 2017). In settings with high gender inequality, women may be more stressed due to inequitable treatment and lack of opportunities, and in be more likely to resort to harsher forms of punishment (Fiala & LaFree, 1988; Klevens & Ports, 2017). Alternatively, it is possible that disempowered individuals, particularly women, are less likely to be able to protect children from aggressive forms of discipline or abuse (Gartner, 1990). Some anthropological research suggests physically aggressive discipline has been used to promote, and sustain, patriarchal values and hegemonic masculinity (Hunter & Morrell, 2021; Morrell, 2001). Other research suggests physically aggressive forms of discipline leads to aggressive male behavior that becomes "normalized and perpetuated into adulthood" (Leach, 2003, p. 385); indeed, boys are more likely to experience

physically aggressive forms of discipline in both the home and the school setting (Gershoff et al., 2015; Mehlhausen-Hassoen, 2019).

While gender inequality tends to be more pronounced in low- and middle-income countries, there are also many LMICs that are making impressive advances toward gender equality and female empowerment. For example, Rwanda ranks number six in overall gender parity according to the World Economic Forum (2015), and Burundi, Mozambique, and Tanzania rank in the top 50. In these countries, there are many female members of parliament, progressive policies that increase wage equality, and high female labor-force participation (World Economic Forum, 2015). It is possible that such gender parity advancements in LMICs significantly improve both parenting and child development outcomes. To date, the joint effects of gender inequality (or gender parity) *and* parenting on child socioemotional outcomes have not been examined.

For example, when a child experiences aggressive discipline in the home, and enters an environment that promotes strict adherence to problematic gender norms, children may exhibit even more aggressive behavior than children living in more equitable societies. On the other hand, there may also be benefits of such micro-macro interactions, with nonaggressive discipline in the home and more equitable opportunities for men and women in the environment being especially beneficial to child cognitive and social outcomes. According to the bioecological model (Bronfenbrenner & Morris, 2006), the power of the microsystem (i.e., parenting) to actualize children's potentials should be greater when inequality is *higher*. However, it may also be possible that, when gender inequality is high, the microsystem may have less of an opportunity to buffer children from deleterious socio-emotional outcomes.

Largely due to the robust line of evidence identifying gender inequality as a primary predictor of international peace and prosperity, the United Nations currently includes the achievement of gender equality as one of the 17 sustainable development goals (SDGs; United Nations, 2022). In order to monitor the improvement (or lack thereof) of gender inequality over time, the United Nations Development Programme (UNDP) introduced the Gender Inequality Index (GII) in 2010. The GII was created with the intention to be measured and compared internationally, and has been used to monitor the progress of the UN's gender equality SDG. The GII measures female disadvantage along three dimensions: reproductive health, the labor market, and empowerment. The reproductive health dimension is measured using the maternal mortality ratio and adolescent birth rate. The labor market dimension is measured via female and male labor force participation rates. The empowerment dimension is measured by examining the female and male population with at least a secondary education, and the female and male shares of parliamentary seats. To gather data along these dimensions, the UNDP relies on publicly available international databases such as the World Health Organization, UNICEF, World Bank, International Parliamentary Union, UN Department of Economic and Social Affair's World Population Prospects, International Labour Organization, and United Nations Population Funds. These databases provide estimates on data such as maternal mortality ratio, adolescent birth rates, parliamentary representation, labor market participation, and educational attainment statistics (United Nations Development Programme, 2021b).

These data are then used to create a single country-level composite measure that ranges from 0 to 1, with higher values indicating greater inequalities between men and women. Although this composite measure has been a groundbreaking way to monitor global gender inequality and includes important aspects of gender inequality, the UNDP notes that this

composite measure fails to capture other important aspects, including local government representation, job quality, unpaid work, caregiving, and asset ownership (United Nations Development Programme, 2021b). Despite these limitations, the GII provides a mathematically elegant composite country-level measure of gender inequality that is available for most of the low- and middle-income countries (LMICs) found in the MICS dataset. Therefore, proximal processes between the GII and parental discipline behaviors will be examined the elucidate the effects that this macro-level construct has on child socio-emotional development.

The Chronosystem in Low- and Middle-Income Countries

The effects of the chronosystem on child development have seldom been explored in LMICs, particularly in relation to parental discipline. This dissertation will specifically explore the effects of child age, as prior research suggests that the influence of contextual factors may vary with child age. For example, meta-analyses suggest that the links between parent mental health difficulties, harsh parenting, and psychopathology is stronger when children are younger (Goodman et al., 2011; Hoeve et al., 2009). Further, compared to experiencing poverty in later childhood or adolescence, experiencing poverty in early childhood has been shown to have more detrimental to child social and cognitive outcomes (Shonkoff et al., 2012; Walker et al., 2011). Young children may be more susceptible to contextual influences due to high brain plasticity (Black et al., 2017) and high reliance on social observation and modeling during early developmental stages (Bandura, 1989).

While most parental discipline studies in LMICs control for child age (Akmatov, 2010; Lansford et al., 2018; Pace et al., 2019), few examine the moderating effects, or proximal processes, that may occur between the chronosystem (i.e., child age) and parental discipline behaviors. While meta-analyses examining children in primarily high-income and Westernized

countries suggest aggressive discipline is equally harmful regardless of child age (Gershoff &

Grogan-Kaylor, 2016a), further research is needed to determine if child age moderates the effects

of aggressive *and* nonaggressive discipline behaviors in LMICs. On the one hand, it is possible

that parental discipline in LMICs is most influential—for better or for worse—in the earliest

months of life, when essential cognitive, social, and behavioral skills are developing (Kochanska

& Thompson, 1997; Montroy et al., 2016). On the other hand, parental discipline may be equally

influential in later childhood, when children develop greater independence and begin having

more influential relationships with peers (Shaw & Bell, 1993). Further, it is possible that the

moderating influence of child age may differ between aggressive and nonaggressive forms of

discipline. For example, it is possible that, like high-income countries, aggressive discipline in

LMICs is equally detrimental across children's ages (Gershoff & Grogan-Kaylor, 2016a), while

nonaggressive discipline is especially helpful in early childhood, when children are learning to

regulate their behaviors and emotions (Cutting & Dunn, 1999). Such research exploration is

needed in order for policymakers and practitioners to know when parental discipline

interventions are most important or influential to key child developmental outcomes.

     The UNICEF MICS is a unique dataset from which to measure the chronosystem, as

child developmental outcomes are only examined among children ages 36-59 months. UNICEF

states that MICS focuses on this age range due to research from multiple disciplines that show

the importance of investing in early childhood development; UNICEF also states that focusing

on this age range supports the United Nations Convention on the Rights of the Child, which

posits that children have the right to develop to the maximum extent possible (UNICEF, 2019b).

Indeed, developmental psychology research shows that the first five years of live are critical to

cognitive, social, emotional, and physical development (Fingerman et al., 2011; Siegler &
Alibali, 2005).

While 36-59 months may seem like a narrow time period, developmental theory suggests
important changes are occurring. For example, between the ages of 3 and 4, children make
considerable advances in their understanding of objects (e.g., grouping, knowledge of the insides
of objects), can maintain longer attention spans, and begin to make causal inferences (e.g.,
anticipating trajectories of moving objects) (Wellman & Gelman, 1992). By the time children
reach age 5, they understand that perception is an integral part of beliefs (Wimmer et al., 1988),
can differentiate reflexes from intended actions (Schulz et al., 1980), and increasingly understand
their own gender identity (Wellman & Gelman, 1992).

Developmental psychology research suggests that children's functioning in earlier stages
of development impacts subsequent stages of development, for better or for worse. For example,
if children's cognitive or social development at age three is hindered due to violence or poverty,
their development at age five is likely to be delayed as well (Feldman, 2004). This suggests
contextual factors could significantly impact children's trajectory of development. For example,
most children exhibit decreases in aggression and increases in prosocial behavior across ages 2-5
(Campbell et al., 2006). However, detrimental contextual factors—such as harsh parenting—may
increase the probability of children increasing aggression levels and decreasing in prosocial
behavior across that same time period. Indeed, a recent study (Jambon et al., 2019) found that
Canadian children exposed to interparental conflict before age three had increases in aggression
and lower prosocial behavior through age six. In low-resourced settings, such contextual
influences may be even more salient and more impactful to children's development
(Bronfenbrenner & Morris, 2006). That is, aggressive parenting may result in child aggression

increasing between 36-59 months, while non-aggressive parenting may result in child aggression decreasing across the same time period.

Children's socioemotional trajectories in their earliest years of life may be especially important to examine in lower-resourced contexts. Children living in low- and middle-income countries face unique opportunities and barriers for achieving their developmental potential. Tight-knit communities that provide social support, parenting assistance, childcare support, and religious or spiritual traditions can be extremely beneficial to children's socio-emotional functioning, even in lower resourced contexts (Fontes, 2011). At the same time, living in impoverished settings with high rates of community violence, or with cultures or systems that promote inequitable treatment, can increase the likelihood of children developing aggression problems and inattentiveness (Komro et al., 2011). Because parenting is integral to child development when children are under five years, it is possible that parental discipline can alter the trajectory of children's socio-emotional functioning, even after accounting for country-level variability. This dissertation will examine how parenting interacts with children's trajectories of socio-emotional development in low- and middle-income countries when children are in their formative years.

Parental Discipline Behaviors and Child Socioemotional Outcomes

Parental discipline behaviors refer to intervention on behalf of a caregiver that aims to halt, redirect, or prevent undesired child behavior (Lansford, 2019). In general, discipline behaviors tend to fall under three broad categories: physical aggression, psychological aggression, and nonaggressive discipline. Both psychological and physical aggression rely on caregiver power-coercion (Dodge et al., 2006; Lansford, 2019). Physical aggression involves caregiver use of physical force such as hitting, slapping, spanking, pushing, shaking, and

pinching (Donnelley & Straus, 2005), while psychological aggression involves caregiver use of verbal behaviors such as yelling, shouting, or calling the child names (Runyan et al., 2009). Nonaggressive discipline refers to non-physical and non-violent behaviors that aim to teach children correct behavior (Grogan-Kaylor et al., 2021). Some of the more well-researched nonaggressive discipline techniques in low-resource settings include verbal reasoning (i.e., explaining why a misbehavior was wrong), redirection (i.e., giving the child something else to do), and taking away privileges (Lansford & Deater-Deckard, 2012).

A robust line of research suggests that physical aggression is harmful to children across contexts, including LMICs (Cuartas et al., 2019; Gershoff & Grogan-Kaylor, 2016a; Kairys & Johnson, 2002; Pace et al., 2019). Recent estimates suggest that nearly 50% of children under five in LMICs experience physical aggression within a one-month period (Cuartas et al., 2019; UNICEF, 2010). Further, physical aggression has been shown to harm multiple aspects of child socioemotional development. For example, physical aggression has been shown to increase child externalizing and internalizing behavior (Maguire-Jack et al., 2012), decrease child prosocial behavior (Piche et al., 2016), decrease child receptive vocabulary skills and general cognitive ability (Cuartas et al., 2020a; Cuartas et al., 2020b), and increase child inattentiveness (Pace et al., 2019).

Regarding psychological aggression, research suggests that the effects of psychological aggression are tantamount to those of physical aggression (Norman et al., 2021). In fact, some studies suggest psychological aggression may be *more* detrimental to developmental outcomes than physical aggression. For example, among a sample of college students in the United States, when childhood corporal punishment, physical abuse, and psychological aggression were included in the same model, psychological aggression was the strongest predictor of adult

psychological maladjustment (Miller-Perrin et al., 2009). Similarly, in a study that examined parental discipline of children in LMICs, parent psychological aggression was the strongest predictor of child aggression and distraction, after controlling for physically aggressive forms of discipline (Ward et al., 2021b). These findings are important to consider, as the prevalence of psychological aggression across the globe is even greater than that of physical aggression, with approximately 65% of children under five in LMICS experiencing psychological aggression within a one-month period (Cuartas et al., 2019). Notably, psychological and physical aggression tend to co-occur—only 2% of children under five in LMICs experience physical aggression without psychological aggression, while 46% experience both forms of aggression (UNICEF, 2010).

Nonaggressive discipline behaviors are the most used discipline strategy in LMICs, with approximately 84% of caregivers using verbal reasoning, redirection, or privilege removal within a one-month period (Cuartas et al., 2019). Despite the high prevalence of nonaggressive discipline, the effectiveness of such strategies is still being explored. Some findings suggest taking away privileges is an effective form of reducing child misbehavior (Grusec et al., 2017), while others suggest taking away privileges is a punitive form of discipline that is disadvantageous to children's emotional development (Stormont-Spurgin & Zentall., 1996). Indeed, recent studies of children living in LMICs suggest that taking away privileges was associated with lower child socioemotional development (Grogan-Kaylor et al., 2021; Ward et al., 2021b). Verbal reasoning has similarly mixed results, with some research showing beneficial effects of verbal reasoning on child socioemotional development (Ward et al., 2021b), and others suggesting it can increase child aggression and distraction in LMICs (Grogan-Kaylor et al., 2021). It is likely that verbal reasoning is frequently paired with forms of psychological

aggression such as yelling, which may explain the latter findings. Redirection appears to be a common parenting strategy used among U.S. parents (Kwon et al., 2013), yet its effectiveness is still being explored in LMICs. One recent study examining children in LMICs found that parent redirection was associated with higher child distraction, but was unassociated with aggression (Ward et al., 2021b). More research is needed to understand which nonaggressive parenting strategies will be most effective for parents in LMICs.

While nonaggressive discipline used in isolation from aggressive forms of discipline may be helpful to children's socioemotional functioning, parents rarely use nonaggressive discipline alone. In fact, in LMICs, an estimated 73% of parents use aggressive *and* nonaggressive discipline strategies (UNICEF, 2010). This signals that statistically examining these forms of discipline in isolation from one another (as in Lansford et al., 2018; Pace et al., 2021; Rothenberg et al., 2021) is likely not ecologically valid; in other words, it fails to capture how parents discipline their children. Along a similar vein, studies examining the differential effectiveness of nonaggressive discipline strategies (Ward et al., 2021b; Grogan-Kaylor et al., 2021; Grusec et al., 2021) suggest that the effects of each nonaggressive discipline strategy greatly differ, with some potentially being more beneficial to children's development than others. This suggests that the nonaggressive discipline items should not be "lumped" into one composite measure, despite the scholarly tradition of doing so (e.g., as seen in Cuartas et al., 2019; Straus et al., 1998; UNICEF, 2010).

In addition to researching the *associations* of discipline behaviors with child outcomes in low- and middle-income countries (Grogan-Kaylor et al., 2021; Kairys & Johnson, 2002; Pace et al., 2019), more research is needed to determine the *prevalence* of aggressive and nonaggressive parental discipline behaviors in LMICs. Prevalence estimates will help interventionists

understand the severity of aggressive discipline and could help serve as a precedent from which

to advocate for policies and services that aim to reduce aggressive discipline and promote

nonaggressive discipline. The most recent nationally representative estimates of aggressive and

nonaggressive parental discipline behaviors in LMIC were calculated by UNICEF (2011), which

examined caregiver reports of discipline techniques used in 2005-2006 across 33 countries, and

by Cuartas and colleagues (2019), which examined caregiver reports of discipline techniques

between 2010-2018 across 49 countries. Neither study examined the prevalence of individual

discipline behaviors—that is, they only examined psychological aggression, physically

aggression, and nonaggressive discipline broadly, making it unclear which specific discipline

behaviors caregivers tend to use in LMICs. Further, Cuartas and colleagues (2019) did not

estimate *combinations* of disciplinary behaviors. Prevalence estimates of combinations of

discipline behaviors are needed to determine whether nonaggressive discipline is still being used

in conjunction with aggressive forms of discipline.

Measuring Parent Aggressive and Nonaggressive Discipline

Parental discipline constructs are typically measured with the Parent-Child Conflict

Tactics Scales (CTSPC; Straus et al., 1998), which include 26 items that aim to map onto

physical, psychological, and nonviolent forms of discipline. The CTSPC was created as a

flexible measure, where scholars could use individual items and/or subscales to understand the

prevalence of parental discipline behaviors. To study parenting behaviors in lower-resourced

contexts across a large number of countries, UNICEF created a modified version of the CTSPC,

which includes 11 parenting behaviors that map onto physically aggressive (6 items),

psychologically aggressive (2 items), and nonaggressive discipline (3 items) constructs. The

UNICEF-modified version of the CTSPC has successfully been implemented in low- and

middle-income settings (UNICEF, 2010), but its validity and reliability have not been well established.

Indeed, the measurement and conceptualization of parental aggressive and nonaggressive discipline when using the CTSPC in a global context is quite variable. The original conceptualization of the CTSPC allowed for an examination of "minor" and "severe" corporal punishment; however, the "severe" subscale had low internal consistency reliability (Straus et al., 1998). Due to the flexibility of the CTS, some scholars have examined the physical aggression items separately, created their own conceptualization of milder and more severe forms of physical discipline, or conceptualized physical aggression as a parent engaging in *any* of the physically aggressive behaviors. Using MICS data, Pace and colleagues (2019) examined spanking in isolation from other forms of discipline; Akmatov and colleagues (2010) conceptualized "moderate" physical abuse as shaking, spanking, and hitting on the hand, arm, or leg, and "severe" physical abuse as hitting on the face, head or ears, hitting with an object, and beating the child as hard as one could; while Cuartas and colleagues (2019) conceptualized physical aggression, psychological aggression, and nonaggressive discipline as the caregiver engaging in *any* form of physical aggression, psychological aggression, or nonaggressive discipline, respectively. UNICEF (2011) conceptualized "severe" discipline hitting the child on the face, head, or ears *or* beating the child as hard as one can, and "moderate" discipline as shaking, spanking, slapping on hand/arm/leg, *or* hitting on the bottom with an object.

To date, there has not been a consensus on how to best utilize the Conflict Tactics Scale measure across low- and middle-income countries. Referring to the original measure, Straus (1994) noted that using these items as a scale and evaluating internal consistency may not be appropriate, as certain items—such as "beating the child as hard as one could"—are particularly

severe, are rare events, and tend to be skewed toward 0 (Straus et al., 1998). Straus and colleagues (1998) also noted that the psychological and physical aggression subscales often have inadequate levels internal consistency. Further, when recommending scoring procedures for the CTSPC items, Straus (2004) suggested that the items could be used separately to create prevalence and frequency estimates. Keeping the items separate may be appropriate due to a number of factors: a) this dissertation is interested in establishing frequency and prevalence of parental discipline, b) MICS adapted the CTSPC items to be dichotomous, measuring whether behaviors occurred within the past month (as opposed to a continuous frequency over the past year), and c) without demonstrated internal consistency and construct validity, lumping these items together may obfuscate the effects of particular discipline constructs, reducing the ability of this research to provide specific recommendations to be made to parents and practitioners.

Research Questions

Given the complex nature of the transactions between children and their microsystem and macrosystem contexts, the dissertation seeks to explore the ecological influences of child development in low- and middle-income countries. Informed by the bioecological model (Bronfenbrenner & Morris, 2006) and the FSM (Conger et al., 2002), this dissertation explores how the effects of aggressive and nonaggressive discipline on child developmental outcomes varies based on chronosystem and macrosystem contextual factors. First, this dissertation provides nationally representative estimates of aggressive and nonaggressive parental discipline behaviors across LMICs. Next, it examines the associations between aggressive and nonaggressive parenting behaviors and child social, behavioral, and cognitive outcomes across LMICs. Then, it examines whether these associations vary by child age, social and economic

development, and gender inequality. The specific questions addressed in this dissertation are as follows:

Research Question 1. What is the household-level prevalence of parental discipline behaviors across low- and middle-income countries? How many households use a combination of aggressive and nonaggressive parenting behaviors in these LMICs? How many households use only aggressive and only nonaggressive parenting behaviors?

Research Question 2. What are the associations between household physically aggressive, psychologically aggressive, and nonaggressive parental discipline behaviors and child social, behavioral, and cognitive outcomes across LMICs? Is there credible country-level variation in these associations?

Research Question 3. Do the relationships between direct physically aggressive, psychologically aggressive, and nonaggressive parental discipline behaviors and child social, behavioral, and cognitive outcomes vary by child age?

Research Question 4. Do the relationships between household physically aggressive, psychologically aggressive, and nonaggressive parental discipline behaviors and child social, behavioral, and cognitive outcomes vary by country-level social and economic development?

Research Question 5. Do the relationships between household physically aggressive, psychologically aggressive, and nonaggressive parental discipline behaviors and child social, behavioral, and cognitive outcomes vary by country-level gender inequality?

Answering these research questions will allow scientists and practitioners to be better attuned to families' needs in lower-resourced contexts. By acknowledging microsystem, chronosystem, and macrosystem factors, this dissertation attempts to provide an ecologically valid representation of micro-macro interactions that result in child developmental outcomes.

Further, answering these questions should unveil the social and economic inequalities that will need to be addressed to achieve positive outcomes for parents and children living in low- and middle-income countries. By unveiling patterns of disciplinary behavior, examining the effects of disciplinary behavior, and by examining how larger systems influence both parents and children, it is anticipated that this dissertation will provide practical and pointed recommendations for researchers, practitioners, and policy makers who desire to promote child development in lower-resourced contexts.

CHAPTER 2

Method

Participants and Procedure

This dissertation used data from the United Nations Children's Fund (UNICEF) Multiple

Indicator Cluster Surveys (MICS). For almost 30 years, MICS have collected data from over 100

LMICs to assess the wellbeing of women and children. In this dissertation, I used MICS rounds 4

("MICS4") and 5 ("MICS5"), which occurred between 2009-2013 and 2012-2017, respectively.

The dataset included publicly released survey responses as of July 2020, which included 858,398

children reported on by respondents (MICS4: 364,941; MICS5: 493,457) across 642,541

households in 66 countries.

Data collection for the MICS was conducted using multi-stage cluster sampling, where

households were randomly selected for participation within clusters. The UNICEF MICS

researchers used representative sampling procedures within each cluster, making survey results

comparable across countries. First, the researchers calculated the necessary sample size for each

country by considering the relative sampling error (based on prior surveys or assumed), level of

desired confidence, proportion of the population in the target group (e.g., households with

children under 5), anticipated coverage rates for survey indicators, the sample design effect, the

average household size, and a non-response adjustment. Next, the researchers decided on the

number of primary sampling units (PSUs) and cluster sizes needed to achieve the desired sample

size. Finally, the researchers randomly selected the specific households that would be

interviewed in the survey. Probability sampling methods were used at every stage of sample

selection, meaning that all individuals in the target population had a known chance of being selected into the sample; however, the exact probably sampling method varied from country to country. Details on the sampling procedures for each MICS round in each country can be found on the UNICEF MICS website (https://mics.unicef.org/tools#survey-design).

Within each sampling area, fieldwork teams conducted in-person interviews with the head of the household. If the head of the household was unavailable at the time of the interview, a spouse of the head-of-household or the child's caregiver was interviewed. A "reference" child—between the ages of 2 and 17 for MICS4, and 1 to 17 for MICS5—within the household was chosen via a random number table for the parental discipline items. After the household survey was completed, the mother or primary caregiver of each child between 36-59 months (i.e., a "focal" child) completed a survey with questions on socio-emotional development. Importantly, the "focal" child is not always the "reference" child. For example, a caregiver could have answered discipline questions about the "reference" child who was 14 years old, and then answered socio-emotional development questions about the "focal" child, who was 36 months old. In the raw dataset, 23.71% of focal children were also the reference child. More details regarding the content and methodology behind UNICEF MICS data can be found on their website: https://mics.unicef.org/about. The University of Michigan Institutional Review Board deemed these analyses of de-identified data exempt from oversight (HUM00191904). Descriptive statistics of all study variables for all research questions can be found in Table 1.

Measures

Parental Discipline Behaviors. Parental discipline behaviors toward the reference child were measured using the UNICEF-modified version of the Parent-Child Conflict Tactics Scales (P-C CTS; Straus et al., 1998). All discipline indicators were dichotomous (0=*no,* 1=*yes*).

Respondents were given the prompt: "Adults use certain ways to teach children the right behavior or to address a behavior problem. I will read various methods that are used. Please tell me if you, or any other adult in your household, has used this method with [child] in the past month." Psychological aggression measures (2 items) included "Shouted, yelled at or screamed at [child]" and "Called [child] dumb, lazy or another name like that." Physical aggression measures (6 items) included "Shook [child]," "Spanked, hit or slapped [child] on the bottom with a bare hand," "Hit or slapped [child] on the hand, arm, or leg," "Hit [child] on the bottom or elsewhere on the body with something like a belt, hairbrush, stick or other hard object," "Hit or slapped [child] on the face, head, or ears," and "Beat [child] up, that is, hit [child] over and over as hard as one could." Nonaggressive measures (3 items) included taking away privileges (i.e., "Took away privileges, forbade something [child] liked or did not allow [child] to leave the house"), verbal reasoning (i.e., "Explained why [child]'s behavior was wrong"), and redirection (i.e., "Gave [child] something else to do").

To determine whether these 11 forms of discipline should be grouped or kept separate, a tetrachoric correlation among all parental discipline items was conducted, and items were scanned for multicollinearity using the variance inflation factor (VIF). The tetrachoric correlations ranged between .15 and .61, with most of the correlations falling in the .2 to .4 range, and the highest correlation being between "Hit or slapped [child] on the hand, arm, or leg," and "Hit or slapping [child] on the face, head, or ears" (r_t = .61). No instance of multicollinearity was detected (i.e., the VIFs fell within a range of 1.24 to 3.44). Further, thorough scale validation for these items has not been conducted across each of the LMICs in this sample. Given that the correlations between the items were modest, multicollinearity

between the items was not detected, and the fact that there was a lack of cross-cultural scale validation of these items for the full sample, parental discipline behaviors were kept separate.

Child Outcomes. Focal child outcomes were measured with questions from the 10-item Early Childhood Development Index (ECDI; Loizillon et al., 2017). Following UNICEF guidelines (Loizillon et al., 2017), three items from this index were used to measure child social, cognitive, and behavioral development. To measure child aggression (behavioral development outcome), the respondent was asked, "Does [child] kick, bite, or hit other children or adults?" (0=*no*, 1=*yes*). To measure child distraction (cognitive development outcome), the respondent was asked, "Does [child] get distracted easily" (0=*no*, 1=*yes*). To measure prosocial behavior (social development outcome), the respondent was asked, "Does [child] get along well with other children?" (0=*no*, 1=*yes*). Due to previously established low inter-item reliability in these items among LMICs (Pace et al., 2019), these items remained separate, and were not combined into a composite measure.

Moderators. Age of the reference child (i.e., for Research Question 3) was continuous and measured in months (range: 36-59 months). Human development was measured with the Inequality-Adjusted Human Development Index (IHDI; United Nations Development Programme, 2016). The IHDI takes three key dimensions of human development into consideration—life expectancy, years of education, and per capita income (gross national income [GNI]), and "discounts" each dimension's average value based on its level of inequality. Inequality adjustments are based on a distribution-sensitive composite indices that were proposed by Foster and colleagues (2005), which pulls from the Atkinson (1970) family of inequality measures (United Nations Development Programme, 2020, p. 4). The UNDP uses these dimensions and adjustments to create a mathematically elegant country-level composite

measure that ranged from 0-1, with higher values indicating higher human development, after adjusting for inequality. The specific mathematical formulas used to create the IHDI can be found in the UNDP technical report (United Nations Development Programme, 2020).

Gender inequality was measured with the Gender Inequality Index (GII; United Nations Development Programme, 2016). The GII measures female disadvantage along three dimensions: reproductive health, the labor market, and empowerment. The UNDP uses these dimensions to create a country-level composite measure that ranged from 0-1, with higher values indicating greater female disadvantage in the country. To increase the interpretability of these measures, the IHDI and GII were multiplied by 100, which converted these measures into percentages (i.e., if the IHDI were originally 0.212, the new value would be 21.2). The IHDI and GII were downloaded from the United Nations Development Programme Data Center website (http://hdr.undp.org/en/data) and merged with the UNICEF MICS data by country. The IHDI and the GII from the *prior year* of the household interview were used in the analysis. That is, if the household interview occurred in 2017, the HDI and GII from 2016 was used. If the IHDI and GII from the prior year was unavailable, data from the closest available year was used.

Sociodemographic Controls. Sociodemographic control variables were informed by prior studies that have examined parental discipline behaviors using UNICEF MICS data (Akmotov, 2011; Grogan-Kaylor et al., 2021; Pace et al., 2019; Ward et al., 2021b). Household wealth score was standardized relative to the country's wealth score, and consisted of five categories: (1=*poorest* [reference], 2=*second poorest*, 3=*middle*, 4=*fourth poorest*, 5=*richest*). Number of household members was a continuous variable capped at 50. The cap of 50 was chosen due to very small Ns (i.e., n<20) that occurred after 50, and due to the difficulty of determining whether numbers higher than 50 were legitimate (e.g., 2 respondents stated they had

a household size of 110). Age of the randomly selected child was continuous and measured in years (range: 1-17 years). Head-of-household sex and the sex of the randomly selected child were dichotomous (0=*male*, 1=*female*), as was whether the respondent was the child's biological parent (0=*other caregiver*, 1=*biological parent*). Mothers' and fathers' education were categorical (0 = *none* [reference], 1 = *primary*, 2 = *secondary-plus*). Attitudes toward physical punishment were measured by asking the respondent whether they believed that children need physical punishment in order to be raised properly (0=*no*, 1=*yes*). Community type (0=*rural*, 1=*urban*) and MICS round number (0=*Round 4*, 1=*Round 5*) were dichotomous.

CHAPTER 3

Results

Research Question 1

What is the household-level prevalence of parental discipline behaviors across low-and middle-income countries? How many households use a combination of aggressive and nonaggressive parenting behaviors in these LMICs? How many households use only aggressive and only nonaggressive parenting behaviors?

Data Analysis. For Research Question 1, data were restricted to nationally representative surveys (approximately 83.48% of the total sample; MICS4: 329,925 children reported on by respondents across 243,352 households in 34 countries; MICS5: 386,632 children reported on by respondents across 301,422 households in 34 countries). If nationally representative surveys were available in MICS4 and MICS5, the MICS5 survey (i.e., the more recent survey) was used. This resulted in a final sample size of 615,844 children reported on by respondents across 58 countries. All available data on the parental discipline variables were used. Descriptive analyses and estimates were conducted in Stata version 17 (StataCorp, 2021). Nationally representative estimates of all 11 parental discipline behaviors for each country were obtained using household-level weights (using the "aweight" specification in Stata). Subsequently, the prevalence of the following parental discipline behaviors were examined across each survey round: 1) the percentage of households that used any aggressive behavior (psychological or physical) in combination with any nonaggressive discipline behavior, and 2) the percentage of households

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that used *only* nonaggressive discipline (as defined by using *any* of the three nonaggressive discipline indicators, and *none* of the aggressive discipline indicators).

   Results. Prevalence estimates of each disciplinary behavior can be found in Table 2. In terms of nonaggressive discipline behaviors, Chad had the highest percentage of households where privileges were taken away (76.26%), followed by Bangladesh (67.55%) and Thailand (66.40%). Belarus had the highest percentage of households where verbal reasoning was used (95.57%), followed by Moldova (94.39%) and Togo (91.69%). Belarus also had the highest percentage of households where redirection was used (90.01%) followed by Ukraine (79.93%) and Kyrgyzstan (77.89%). In terms of aggressive discipline, Tunisia had the highest percentage of households where a child was beaten as hard as one could (15.86%), followed by Afghanistan (13.49%) and Nigeria (13.43%). Tunisia also had the highest percentage of households where a child was shouted at (87.35%), followed by the State of Palestine (86.51%) and Ghana (85.00%).

   A visual representation of prevalence estimates of discipline behaviors can be found in Figure 1. A visual representation of prevalence estimates relative to other countries in the sample can be found in Figure 2. In Figure 2, the size of bars conveys the relative prevalence of discipline behavior compared to the other countries in the sample. Future research will need to explore the reasons why certain countries have higher endorsement rates of discipline items than others. Differences in endorsement rates could be due to factors such as social desirability differences, differences in item interpretation, language differences, or other factors that should be explored. Rather than serving as a diagnostic or finite tool, Figure 2 should serve as a precedent from which researchers can investigate relative differences in parental endorsement of discipline items across low- and middle-income countries.

Results from weighted tabulations showed that, in MICS4, 67.48% of households used a combination of aggressive and nonaggressive discipline behaviors; in MICS5, only 47.99% of households used this combination. Further, in MICS4, 2.57% of households used only aggressive discipline behaviors; in MICS5, 4.64% of households used only aggressive discipline. Finally, in MICS4, 23.03% of households used only nonaggressive discipline strategies; in MICS5, 29.15% of households used only nonaggressive discipline.

Research Question 2

What are the associations between household-level physically aggressive, psychologically aggressive, and nonaggressive parental discipline behaviors and child social, behavioral, and cognitive outcomes LMICs? Is there credible country-level variation in these associations?

Data Analysis. For Research Question 2, the analytic sample was restricted to households with focal children between 36-59 months (i.e., approximately 27.40% of the original sample), as child socio-emotional outcomes were only measured for children between 36-59 months. Further, participants who skipped all parental discipline questions were removed from the sample (dropping 2.74% of the sample). Duplicate households were also removed, due to Stata not being able to produce results when individuals were nested within households, within countries (i.e., either displaying "initial values not feasible" errors, or computing thousands of iterations with a "backed up" or "not concave" messages). After duplicate households were removed, a screening of the intra-class correlations (ICC) revealed a statistically non-significant ICC for household for all parental discipline behaviors and for child outcomes. The final sample size consisted of 208,156 responses across 63 countries.

Data were scanned for outliers and multicollinearity (using the variance inflation factor [VIF]), neither of which was found. Data were screened for patterns of missingness. No missing data were present on the dependent variables, and missing data on the parental discipline behaviors were very few, ranging from .05% to 1.6%. Little's MCAR test was attempted in Stata, but the error "insufficient degrees of freedom for chi-square test" was produced. Therefore, missing data analyses were conducted on the parental discipline behaviors. Greater household wealth and MICS4 surveys were associated with greater odds of missingness on all parental discipline behaviors. Mothers having higher educational attainment was associated with decreased odds of missing data on the redirection, taking away privileges, beat as hard as one could, spanking, and shouting variables. Fathers having higher educational attainment was associated with *greater* odds of missing data on the hitting the child with an object and taking away privileges variables. Greater number of household members were associated with decreased odds of missingness on the redirection and taking away privileges variables. The head of the household being the biological parent was associated with greater odds of missingness on the taking away privileges and shouting variables.

Listwise deletion, or complete case analysis, is frequently cited as a biased method for handling missing data, and is generally not preferred when addressing issues of incomplete data (Woods et al., 2021). Nevertheless, Listwise deletion was chosen for Research Questions 2-5 for several reasons: 1) the dataset is extremely large for social science standards, 2) using complex methods (such as multiple imputation) on this large dataset will be computationally taxing with potentially small payoff due to 3) the extremely small amount of missing data (Schafer, 1999), and 4) multilevel modeling was used, meaning that all available data from the independent

variables were used in analyses (i.e., a maximum likelihood estimator is used, rather than a least-squares estimator, which is typically more susceptible to bias).

To answer Research Question 2, all 11 forms of parental discipline predicted child outcome variables using multilevel logistic regression, with families nested within countries. In a dataset where individuals come from different countries, individuals within the same country are likely to engage in similar behavior. Therefore, multilevel modeling helps to account for the correlation that exists due to families being nested within countries. To determine whether there was credible country-level variation in the associations between the parental discipline behaviors and the child outcomes, random slopes were requested for all 11 parental discipline behaviors. Bayesian estimation has been shown to estimate a large number of random slopes more efficiently than frequentist statistics (Barr et al., 2013; Frank, 2018). Indeed, when these analyses were attempted in Stata version 17 (StataCorp, 2021) using traditional frequentist statistics, the models failed to converge. Therefore, Bayesian estimation was used in order to promote the accurate estimation of the 11 random slopes (Nalborczyk et al., 2019). When using Bayesian estimation, instead of p-values, 95% "credible intervals" are provided, which conveys that there is a 95% probability that the true estimate would lie within the interval. The data were imported into R where the "brms" package was used to conduct Bayesian multilevel logistic regression analyses (Burkner, 2017; Burkner, 2018). Bayesian estimation resulted in the successful convergence of the model. After listwise deletion, the analytic sample size for Research Question 2 was 154,800 surveys across 60 countries.

Results. Descriptive statistics of study variables for Research Question 2 can be found in Table 1. The average age of the reference child was approximately 6 years. The average number of household members was about seven. Most households came from the poorest (26.53%) or

second poorest (21.90%) household wealth score category. Verbal reasoning was the most-used disciplinary behavior (79.24%) followed by shouting (65.85%) and taking away privileges (46.22%). Regarding physical aggression, spanking (42.84%) and shaking (33.77%) were common. The ICCs for our primary variables of interest showed that between approximately 10% (spanking) to 42% (beating as hard as one could) of the variation in parenting could be attributed to the country in which the family lived. Further, between 12% (aggression) and 14% (prosocial behavior) of the variation in child outcomes could be attributed to the country in which the family lived in.

Results from the fixed-effects portion of the multilevel model can be found in Table 3. Regarding the outcome of child aggression, shouting in the household was associated with 20% greater odds of child aggression, and calling names was associated with 31% greater odds of child aggression. Nearly all physical aggression items were associated with greater odds of child aggression, including hitting on the face, head, or ears (OR = 1.22), hitting with an object (OR = 1.18), hitting on the arm or leg (OR = 1.13), and spanking (OR = 1.13). However, verbal reasoning was associated with 8% lower odds of child aggression.

Regarding the outcome of child distraction, shouting in the household was associated with 8% greater odds of the child being easily distracted, and calling names was associated with 15% greater odds of the child being easily distracted. Two physically aggressive behaviors were associated with child distraction, including hitting on the face, head, or ears (OR = 1.06) and shaking (OR = 1.09). Taking away privileges in the household was associated with 8% *greater* odds of the child being easily distracted.

Regarding the outcome of child prosocial behavior, calling names in the household was associated with 13% lower odds of the child getting along with others; hitting on the face, head,

or ears was associated with 14% lower odds of the child getting along with others; beating as hard as one could was associated with 15% lower odds of the child getting along with others; and shaking was associated with 17% lower odds of the child getting along with others. Verbal reasoning was associated with 30% greater odds of the child getting along with others, and redirection was associated with 8% greater odds of the child getting along with others. However, taking away privileges was associated with 6% *lower* odds of the child getting along with others.

Results from the random-effects portion of the model can be found in Table 4. Almost all random effects were statistically credible, meaning there was country-level variation in the relationship between almost all parental discipline behaviors and child outcomes. The only non-credible random effect was hitting on the arm or leg predicting children getting along with others, meaning that the relationship between these two variables was largely consistent across countries. The random effects for all 11 forms of discipline across 60 countries can be found in Figures 3-19. The graphs of the random slopes demonstrated country-level variability in the effects of discipline behavior on child outcomes. In general, psychological aggression and physical aggression in the household were not beneficial to child socio-emotional outcomes across countries. In fact, no psychologically or physically aggressive behavior was credibly associated with lower odds of aggression in any country. Further, in general, taking away privileges appeared to be associated to *poorer* child outcomes across most countries, while verbal reasoning appeared to be associated with *beneficial* child outcomes across most countries. Redirection appeared to have either minimal or beneficial associations with child outcomes across countries.

Research Question 3

Do the relationships between direct physically aggressive, psychologically aggressive, and nonaggressive parental discipline behaviors and child social, behavioral, and cognitive outcomes vary by child age?

Data Analysis. For Research Question 3, the analytic sample was restricted to households with focal children between 36-59 months (i.e., approximately 27.40% of the original sample), as child socio-emotional outcomes were only measured for children between 36-59 months. Further, participants who skipped all parental discipline questions were removed from the sample (dropping 2.74% of the sample). The analytic sample was further restricted to focal children who directly experienced the parental discipline behavior, in order to ensure that our primary moderator of interest—child age—was referring to the same child that was disciplined (as opposed to the age of a different child in the same household). This resulted in a final sample size of 99,139 respondents across 63 countries.

In this sample, there were no duplicate households. However, Stata was not able to produce results when individuals were nested within households, within countries (i.e., either displaying "initial values not feasible" errors, or computing thousands of iterations with a "backed up" or "not concave" messages). A screening of the intra-class correlations (ICCs) revealed a statistically non-significant ICC for household for all parental discipline behaviors and for child outcomes. Therefore, analyses were conducted with individuals nested within countries. Data were scanned for outliers and multicollinearity (using the variance inflation factor [VIF]), neither of which was found. Data were screened for patterns of missingness. No missing data were present on the dependent variables, and missing data on the parental discipline behaviors were very few, ranging from .06% to 1.5%. Little's MCAR test was attempted in Stata, but the

error "insufficient degrees of freedom for chi-square test" was produced. Therefore, missing data analyses were conducted on the parental discipline behaviors.

The MICS4 surveys were associated with greater odds of missingness on all parental discipline behaviors. Greater household wealth score was associated with greater odds of missingness on all parental discipline behaviors except for beating as hard as one could, shouting, and calling names. Mothers having higher educational attainment was associated with decreased odds of missing data on the spanking, hitting on the hand, arm, or leg, taking away privileges, and redirection variables. Fathers having higher educational attainment was associated with greater odds of missing data on the hitting on the hand, arm, or leg and taking away privileges variables. Greater number of household members was associated with lower odds of missingness of the hitting on the hand, arm, or leg and taking away privileges variables. The head of household being the biological parent was associated with greater odds of missing data on the verbal reasoning and taking away privileges variables. The head of household sex being female was associated with greater odds of missingness on the hitting on the hand, arm, or leg, hitting with an object, and taking away privileges variables. The focal child being female was associated with greater odds of missingness on the taking away privileges variable.

As previously mentioned, Listwise deletion, or complete case analysis, is frequently cited as a biased method for handling missing data, and is generally not preferred when addressing issues of incomplete data (Woods et al., 2021). Nevertheless, Listwise deletion was chosen for Research Question 3 due to 1) the dataset being large, 2) potentially minimal payoff for using more complex methods due to 3) the extremely small amount of missing data (Schafer, 1999), and 4) multilevel modeling was used, meaning that all available data from the independent

variables were used in analyses (i.e., a maximum likelihood estimator is used, rather than a least-squares estimator, which is typically more susceptible to bias).

To answer Research Question 3, multilevel logistic regression models were conducted in Stata, with individuals nested within countries. As noted in Research Question 2, multilevel modeling helps to account for the correlation that exists due to families being nested within countries. An interaction effect with child age was introduced to each parental discipline behavior, one at a time. For example, an interaction effect between shouting and child age (while controlling for all other parental discipline behaviors) predicted the child outcomes; then, an interaction effect calling the child names and child age predicted the child outcomes; and so forth. To better understand the interactions, Stata's "margins" and "marginsplot" commands were used to inspect the predicted probabilities of the child outcomes and graph the statistically significant interaction effects. After listwise deletion, the analytic sample size for Research Question 3 was 72,024 surveys across 60 countries.

Results. Descriptive statistics for Research Question 3 can be found in Table 1. The ICCs showed that between 10% (spanking) and 41% (beating as hard as one could) of the variation in parenting behaviors could be accounted for by the country in which the family was living. Further, between 12% (aggression) and 14% (prosocial behavior) of the variation in child outcomes could be attributed to the country in which the family was living.

Main effects from Research Question 3 can be found in Table 5; interaction effects from Research Question 3 can be found in Table 6. Analyses showed three statistically significant interaction effects between child age and discipline behaviors predicting child aggression. As seen in Figure 20, when a child was *not* shaken or hit with an object, there was a negative association between child age and aggression, such that when age in months increased,

aggression decreased. However, when a child was shaken (interaction OR= 1.01, p = .003) or hit with an object (interaction OR= 1.01, p = .004), the relationship between child age and aggression remained largely unchanged. Similarly, as seen in Figure 21, when a child did *not* have privileges taken away, there was a negative association between child age and aggression. However, when a child had privileges taken away, the relationship between child age and aggression remained largely unchanged (interaction OR= 1.01, p = .012).

There were no statistically significant interactions between child age and discipline behaviors predicting child distraction. However, there were two statistically significant interactions predicting child prosocial behavior. Specifically, as seen in Figure 22, when a child was *not* called names, and when a child was *not* hit on the hand, arm, or leg, there was a positive relationship between child age and child prosocial behavior. However, when a child was called names (interaction OR = 0.99, p = .025) or hit on the hand, arm, or leg (interaction OR = 0.99, p = .002), the relationship between child age and child prosocial behavior remained largely unchanged. These results suggest that psychological aggression, physical aggression, and taking away privileges all influenced the association between child age and socioemotional outcomes. Specifically, when aggressive forms of discipline were used, the trajectory of child aggression and child prosocial behavior changed in a disadvantageous manner.

Research Question 4

Do the relationships between household physically aggressive, psychologically aggressive, and nonaggressive parental discipline behaviors and child social, behavioral, and cognitive outcomes vary by country-level social and economic development?

Data Analysis. For Research Questions 4, the sample from Research Question 2 was replicated (i.e., the sample of 208,156 responses across 63 countries), and multilevel logistic

regression models were conducted in Stata, with individuals nested within countries. As mentioned previously, multilevel modeling helps to account for the correlation that exists due to families being nested within countries. To answer Research Question 4, an interaction effect with IHDI was introduced to each parental discipline behavior, one at a time. For example, an interaction effect between shouting and IHDI (while controlling for all other parental discipline behaviors) predicted the child outcomes; then, an interaction effect calling the child names and IHDI predicted the child outcomes; and so forth. After listwise deletion, the analytic sample size for Research Question 4 was 151,792 surveys across 58 countries. To better understand the interactions, Stata's "margins" and "marginsplot" commands were used to inspect the predicted probabilities of the child outcomes and graph the statistically significant interaction effects. A list of countries and IHDI scores in ascending order can be found in Table 7.

Results. Main effects from Research Question 4 can be found in Table 8; interaction effects from Research Question 4 can be found in Table 9. Regarding the outcome of child aggression, the inequality-adjusted human development index (IHDI) interacted with most discipline behaviors, including shouting (interaction OR = 1.008, $p < .001$), calling names (interaction OR = 1.003, $p = .001$), shaking (interaction OR = 1.003, $p < .001$), spanking (interaction OR = 1.004, $p < .001$), hitting the child on the hand, arm, or leg (interaction OR = 1.003, $p = .002$), hitting the child on the face, head, or ears (interaction OR = 1.003, $p = .003$), beating the child as hard as one could (interaction OR = 1.005, $p = .006$), and redirecting (interaction OR = 1.003, $p = .028$). Inspection of the graphs involving psychological and physical aggression (see Figures 23-26) suggest that, when inequality-adjusted human development scores were low, children had a high likelihood of being aggressive, regardless of household parental discipline behaviors. However, children were less likely to be aggressive

when parents abstained from aggressive discipline *and* IHDI scores were high. While the interaction between IHDI and redirection was statistically significant, inspection of the graph (see Figure 27) suggested that this interaction was not substantively meaningful.

Regarding the outcome of child distraction, the inequality-adjusted human development index interacted with four forms of household discipline: shouting (interaction OR = 1.001, p = .044), spanking (interaction OR = 1.002, p = .005), hitting on the face, head, or ears (interaction OR = 1.004, p < .001), and verbal reasoning (interaction OR = 1.003, p = .008). Inspection of the graphs involving psychological and physical aggression (see Figures 27-29) suggested that, when IHDI scores were low, children were likely to be distracted, regardless of aggressive discipline behaviors in the household. However, children were less likely to be distracted when caregivers abstained from aggressive discipline *and* IHDI was high. Interestingly, as can be seen in Figure 29, verbal reasoning was only associated with lower odds of child distraction when IHDI scores were *low*. This suggests that verbal reasoning may be particularly important in countries categorized with lower human development.

Regarding the outcome of child prosocial behavior, the inequality-adjusted human development index interacted with all forms of household discipline, except for taking away privileges. Specifically, the IHDI interacted with shouting (interaction OR = 0.983, p < .001), calling names (interaction OR = 0.990, p < .001), shaking (interaction OR = 0.991, p < .001), spanking (interaction OR = 0.988, p < .001), hitting on the hand, arm, or leg (interaction OR = 0.993, p < .001), hitting with an object (interaction OR = 0.995, p = .001), beating as hard as one could (interaction OR = 0.992, p = .001), verbal reasoning (interaction OR = 0.990, p < .001), and redirecting (interaction OR = 0.994, p < .001). Inspection of the graphs involving psychological and physical aggression (see Figures 29-33) suggested that children were more

likely to get along with others when parents abstained from aggressive discipline behaviors *and* IHDI scores were high. Interestingly, as seen in Figure 34, verbal reasoning and redirection were only associated with higher odds of child prosocial behavior when IDHI scores were *low*. Again, this suggests that nonaggressive discipline behaviors (specifically redirection and verbal reasoning) may be particularly beneficial to child social development in countries categorized by low levels of human development.

Research Question 5

Do the relationships between household physically aggressive, psychologically aggressive, and nonaggressive parental discipline behaviors and child social, behavioral, and cognitive outcomes vary by country-level gender inequality?

Data Analysis. For Research Question 5, the sample from Research Question 2 was replicated (i.e., the sample of 208,156 responses across 63 countries), and multilevel logistic regression models were conducted in Stata, with individuals nested within countries. As mentioned previously, multilevel modeling helps to account for the correlation that exists due to families being nested within countries. To answer Research Question 5, an interaction effect with GII was introduced to each parental discipline behavior, one at a time, in the same fashion as Research Question 4. After listwise deletion, the analytic sample size for Research Question 5 was 124,847 surveys across 52 countries. To better understand the interactions, Stata's "margins" and "marginsplot" commands were used to inspect the predicted probabilities of the child outcomes and graph the statistically significant interaction effects. A list of countries and GII scores in ascending order can be found in Table 10.

Results. Main effects from Research Question 5 can be found in Table 11; interaction effects from Research Question 5 can be found in Table 12. Regarding the outcome of child

aggression, the gender inequality index (GII) interacted with all household parental discipline

behaviors except for verbal reasoning. Specifically, GII interacted with shouting (interaction OR

= 0.990, p < .001), calling names (interaction OR = 0.990, p < .001), shaking (interaction OR =

0.993, p < .001), spanking (interaction OR = 0.992, p < .001), hitting on the hand, arm, or leg

(interaction OR = 0.992, p < .001), hitting with an object (interaction OR = 0.995, p < .001),

hitting on the face, head, or ears (interaction OR = 0.993, p = .003), beating as hard as one could

(interaction OR = 0.987, p < .001), taking away privileges (interaction OR = 0.997, p < .001),

and redirecting (interaction OR = 1.002, p = .044). Inspection of the graphs involving

psychological and physical aggression (see Figures 34-38) suggested that, when gender

inequality was high, children were likely to be aggressive, regardless of household parental

discipline behaviors. However, children were less likely to be aggressive when parents abstained

from aggressive discipline behaviors *and* gender inequality was low. While the interactions

involving taking away privileges and redirection were statistically significant, inspection of the

graphs (see Figure 39) suggested that these interactions were not substantively meaningful.

Regarding the outcome of child distraction, gender inequality interacted with six

household parental discipline behaviors: shouting (interaction OR = 0.997, p = .016), shaking

(interaction OR = 0.992, p < .001), spanking (interaction OR = 0.993, p < .001), hitting on the

hand, arm, or leg (interaction OR = 0.994, p < .001), hitting on the face, head or ears (interaction

OR = 0.996, p = .036), and redirecting (interaction OR = 0.998, p = .027). Inspection of the

graphs involving psychological and physical aggression (see Figures 39-41) suggested that, when

gender inequality was high, children were likely to be easily distracted, regardless of household

parental discipline behaviors. However, children were less likely to be distracted when parents

abstained from aggressive discipline behaviors *and* when gender inequality was low. While the

interaction redirection was statistically significant, inspection of the graph (see Figure 42) suggested that this interaction was not substantively meaningful.

Regarding the outcome of child prosocial behavior, gender inequality interacted with all household parental discipline behaviors except taking away privileges and redirecting. Specifically, gender inequality interacted with shouting (interaction OR = 1.018, p < .001), calling names (interaction OR = 1.019, p < .001), shaking (interaction OR = 1.014, p < .001), spanking (interaction OR = 1.015, p < .001), hitting on the hand, arm, or leg (interaction OR = 1.009, p < .001), hitting with an object (interaction OR = 1.011, p < .001), hitting on the face, head, or ears (interaction OR = 1.007, p = .013), beating as hard as one could (interaction OR = 1.011, p = .008), and verbal reasoning (interaction OR = 1.008, p = .002). Inspection of the graphs involving psychological and physical aggression (see Figures 42-46) suggested that, when gender inequality was high, children were less likely to get along with others, regardless of household parental discipline behavior. However, children were more likely to get along with others when parents abstained from aggressive forms of discipline *and* gender inequality was low. Interestingly, as can be seen in Figure 47, verbal reasoning was associated with greater odds of children getting along with others when gender inequality was *high*. In other words, verbal reasoning appeared to be particularly important to child prosocial behavior in countries with high gender inequality.

CHAPTER 4

Discussion

This dissertation aims to unveil the ecological influences and consequences of parental discipline behaviors across low- and middle-income countries (LMICs). This dissertation draws upon bioecological and family stress theories, proposing that the associations of parenting behaviors with child outcomes must be understood in a multilevel context that includes the country, chronosystem, and socio-economic inequalities. Using a large sample of families from LMICs, this dissertation provides important information regarding the prevalence of, consequences of, and proximal processes involved in parental discipline behaviors.

Prevalence of Parental Discipline and Associations with Child Outcomes

Prior research has documented high levels of physical punishment and child abuse in households from low- and middle-income countries (Cuartas et al., 2019; UNICEF, 2011). However, less research has examined the prevalence of specific disciplinary behaviors—both aggressive and non-aggressive. Estimates of individual disciplinary behaviors, as well as estimates of combinations of disciplinary behaviors, are needed to help interventionists understand which behaviors are most often used by parents in these settings. Therefore, this dissertation provided nationally representative household prevalence estimates of 11 forms of parental discipline behaviors across 58 LMICs.

Countries varied widely in the percentage of households that used aggressive and nonaggressive discipline behaviors in the past month. Some countries had a high percentage of households that used nearly all parental discipline behaviors (aggressive and nonaggressive),

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such as Afghanistan, Benin, Chad, Central African Republic, Mauritania, Nigeria, Tunisia, Republic of the Congo, and the State of Palestine. Other countries had a high percentage of households that primarily used nonaggressive discipline strategies, such as Belarus, Kazakhstan, Turkmenistan, Ukraine, and Uruguay. And some countries—such as Costa Rica, Cuba, the Dominican Republic, Mongolia, and El Salvador—had low percentages of households who engaged in discipline behaviors, whether aggressive or nonaggressive. These prevalence estimates may provide insight into the social norms of parental discipline in these countries and could help inform interventionists as to which behaviors parents tend to use most often within a specific country (Vaughan-Eden et al., 2019). Interventions could then be tailored to help parents engage in the behaviors that may be most beneficial to children living within those countries. Such interventions should take the family's context into consideration (e.g., the resources of the family, country-level inequalities and resources, norms around parenting), and address the underlying reasons why parents use certain discipline techniques in each context (Lansford et al., 2018).

These prevalence estimates may also reflect differences in social desirability when responding to items from the UNICEF-modified version of the parent-child conflict tactics scale (Putnick, 2019). For example, it is possible that in countries where few discipline items were endorsed, such as Cuba and Costa Rico, parents *did* use a variety of discipline behaviors on a monthly basis, but felt less comfortable endorsing discipline items in front of a survey researcher. Or, it is possible that the wording or translation of the conflict tactics scale items did not align well with the parental discipline behaviors that are used in these countries, and therefore few caregivers endorsed the 11 items presented. Additionally, it is possible that in countries where many parental discipline items were endorsed across households, such as Benin

and Chad, the discipline items were viewed as evidence of involved and attentive parenting, and therefore socially desirable to endorse (Boydell et al., 2017). More research is needed on how parents interpret the UNICEF-modified conflict tactics scales across countries and cultures to determine the other factors that may explain the heterogeneity in discipline prevalence rates. To accomplish this, future researchers should make use of both qualitative methods (i.e., interviewing parents to understand their interpretation of the scale) as well as traditional scale validation methods.

Prevalence estimates also showed that, across countries, many households used a combination of discipline behaviors. In MICS4 (i.e., between 2009-2013), over 67% of households used a combination of aggressive and nonaggressive discipline behaviors, and in MICS5 (i.e., between 2012-2017) nearly 48% of households used this combination. Importantly, only 2-5% of households relied solely on aggressive discipline behaviors. These estimates show that it is relatively rare for caregivers to *only* use aggressive disciplinary strategies, and that caregivers who use aggressive forms of discipline are also likely to use nonaggressive discipline strategies. While these prevalence estimates alone cannot explain *why* this combination of disciplinary behaviors occurs, there are numerous potential explanations. It is possible that parents using aggressive and nonaggressive discipline strategies are struggling to control or correct their children's behavior, and have not found one discipline strategy in particular that seems to be effective; therefore, they rely on multiple disciplinary strategies (McDaniel et al., 1990). In this case, interventionists and practitioners need to be especially attuned to helping parents understand how to implement nonaggressive discipline techniques most effectively.

Further, practitioners may need to explore the context in which nonaggressive discipline strategies are used to better determine why these parents are not using nonaggressive discipline

strategies alone. For example, parents may be taking away privileges in conjunction with spanking or explaining why a behavior was wrong while shouting (Grogan-Kaylor et al., 2021; Ward et al., 2022). Longitudinal research across multiple countries suggest that such patterns of behavior can be influenced by country-level normativeness of aggressive and nonaggressive behavior (Lansford et al., 2016; Lansford et al., 2018). In these cases, practitioners can help parents continue to engage in nonaggressive strategies while also helping the parent to refrain from using aggressive forms of discipline by providing psychoeducation (Holland & Holden, 2016), increasing parents' emotion regulation (Ramsden & Hubbard, 2002), and helping to shift norms surrounding harsh forms of discipline (Lansford et al., 2016). In some cases, physically aggressive forms of discipline may be viewed as an important and holistic part of disciplining children. For example, impoverished mothers in Uganda have expressed that they hit their children to teach respectability (both toward adults and the self), establish household routines, and protect children from health risks (Boydell et al., 2017). Other mothers in Cape Town, South Africa have expressed that physically aggressive parenting is intergenerational, in that mothers use physical aggression because their mothers did (Lachman et al., 2018). Programs such as Parenting for Lifelong Health have been shown to address these norms and concerns in a culturally sensitive and culturally acceptable manner, while also decreasing aggressive forms of punishment in low- and middle-income countries (Ward et al., 2020).

Results from weighted tabulations suggest that about 1 in 4 households in LMICs rely solely on nonaggressive discipline strategies. One recent study using UNICEF MICS data (Ward et al., 2022) found that parents who primarily used nonaggressive discipline behaviors tended to have fewer household members, had higher household wealth, did not believe that children need physical punishment in order to be raised properly, had parents with higher educational

attainment, and on average their children had higher levels of positive socio-emotional outcomes compared to parents who used more aggressive disciplinary behaviors. On the other hand, when parents perceive that aggressive discipline is normative and necessary in their culture, when parents have lower educational attainment, and when children have higher externalizing behaviors, parents are more likely to rely on aggressive forms of discipline (Lansford et al., 2016). From these results, interventions that decrease attitudes favoring physical punishment and increase access to education may help to shift disciplinary behaviors toward less aggressive approaches among caregivers in LMICs. Qualitative research may be useful to explore why some families in LMICs only use nonaggressive discipline behaviors and may elucidate strength and resilience factors among these families.

However, prior research has suggested that altering beliefs about aggressive parenting on an individual level may not be sufficient to change parental behavior, as there tends to be a high disconnect between disciplinary beliefs and behavior on an international scale (Lansford & Deater-Deckard, 2012). Instead, some research suggests that legally banning corporal punishment may be a more effective way to change societal-level beliefs *and* behavior (Zeigert, 1983; Zolotor & Puzia, 2010). Such laws not only protect the rights of children as outlined in the United Nations Convention on the Rights of the Child (UNCRC, 2011) and align with the United Nations Millennium Development Goals to shield children from violence and abuse (UNICEF, 2003), but could potentially shift societal beliefs and behavior more quickly and effectively than micro-level interventions alone.

Parental Discipline Behaviors and Child Outcomes

In addition to establishing prevalence estimates of parental discipline behaviors, this dissertation examined the associations between parental discipline behaviors and child

aggression, distraction, and prosocial behavior in low- and middle-income countries. Numerous studies have documented the detrimental effects of aggressive parenting on child development (Gershoff & Grogan-Kaylor, 2016; Kairys & Johnson, 2002 Pace et al., 2019); however, fewer studies have explored the associations between nonaggressive discipline behaviors with child outcomes in low-resourced settings. For parenting programs and policies to promote effect nonaggressive discipline in LMICs, research must first establish which nonaggressive discipline behaviors should be promoted. Further, although parents tend to use aggressive discipline behaviors in concordance with nonaggressive discipline behaviors, studies rarely empirically examine the effects of aggressive and nonaggressive discipline behaviors simultaneously. Therefore, this study examined the associations between 11 parental disciplinary behaviors on child development in LMICs.

Consistent with prior studies showing that parent-to-child physical and psychological aggression are disadvantageous for children's development (Gershoff & Grogan-Kaylor, 2016), parental use of psychological aggression (i.e., shouting; calling names) and physical aggression (i.e., shaking; hitting on the face, head, or ears; hitting on the arm or leg) toward the child were associated with greater child aggression and distraction on average across countries. Spanking and hitting the child with an object were also associated with child aggression, but not child distraction. Psychological aggression (i.e., calling names) had the strongest association with child aggression and distraction. This result parallels research that suggests psychological aggression can be just as harmful to children as physical aggression (Norman et al., 2012), and parallels findings from studies using person-centered analytic techniques (i.e., latent class analysis) that found unique problematic developmental outcomes among children who experienced harsh forms of psychological aggression (Kim et al., 2014; Lee et al., 2011). As a

whole, these results point to the necessity for parenting programs, researchers, and advocates to advise caregivers against using forms of psychological aggression such as name-calling.

Some non-aggressive discipline behaviors were associated with children's advantageous socioemotional development, whereas others were not. Verbal reasoning was consistently associated with more advantageous developmental outcomes (i.e., lower aggression and higher prosocial peer relations); however, taking away privileges was associated with poorer developmental outcomes (i.e., lower prosocial peer relations). Giving the child something else to do was not associated with child aggression or distraction, but was associated with higher prosocial behavior. These results suggest that verbal reasoning is the most effective parenting behavior—that is measured within the MICS data—to promote child socioemotional development in LMICs. The Better Parenting Programme, which has been tested in LMICs, has been shown to increase the use of verbal reasoning among parents and caregivers (Al-Hassan & Lansford, 2011). Giving the child something else to do did not hinder socioemotional development, and was associated with higher odds of prosocial behavior, signaling that this may be a non-harmful—and potentially beneficial—parenting strategy for children in LMICs, on average.

Although taking away privileges is an alternative to aggressive parenting behaviors, its use may occur in conjunction with shouting and spanking and involve power-assertion strategies that are similar to those used during incidents of parent-to-child aggression (Dodge et al., 2006). This means that pediatricians and healthcare workers in LMICs may need to take caution when recommending taking away privileges as a discipline strategy; instead, practitioners may need to encourage caregivers to use non-coercive discipline methods. The Positive Discipline in Everyday Parenting (PDEP) is a child rights-based parent program designed to decrease power-

assertive strategies that undermine child wellbeing (Durrant, 2020). PDEP seeks to promote a collaborative relationship between caregivers and children and has shown promising outcomes when implemented internationally.

The relationship between nearly all 11 parenting behaviors and child socioemotional development significantly varied by country. These results are consistent with prior research that shows country- and cultural-level variation in the associations of aggressive and non-aggressive parenting behaviors with child outcomes (Gershoff et al., 2010; Lansford & Deater-Deckard, 2012; Pastorelli et al., 2016; Grogan-Kaylor et al., 2021). A key finding of this analysis was that, although there was variation in the strength of associations between parental aggression with child outcomes across the 60 LMICs, no form of physical aggression benefited child socioemotional development at a statistically credible level in any country. From an intervention standpoint, cross-cultural efforts to reduce caregiver use of aggressive behaviors are merited. Programs such as the Parenting for Lifelong Health, which is supported by the World Health Organization, may help reduce aggressive parenting against children in low-resource settings such as those examined in our study (World Health Organization, 2020). Paralleling the recommendations of the AAP (Sege & Siegel, 2018), pediatricians and other healthcare workers in LMICs should strongly discourage parental use of aggression to correct child misbehavior.

When considering both the fixed effects and random effects together, this analysis yielded three key takeaways: 1) on average, psychological and physical aggression was not beneficial to child outcomes in LMICS, 2) on average, verbal reasoning and redirection were beneficial to child outcomes in LMICs, and 3) there was statistically credible variability in the relationship between aggressive and nonaggressive parental discipline behaviors with child outcomes across countries. This means that, while researchers and practitioners can be confident

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in steering parents away from aggressive forms of discipline—regardless of the country in which the child is living—there is a rife of opportunities for researchers to explain *why* the relationship between parental discipline and child socioemotional development varies across countries. Researchers should especially attend to the relative effectiveness of nonaggressive discipline strategies internationally. Understanding which nonaggressive discipline behaviors are most effective in specific countries and cultures will aid interventionists in providing helpful, culturally sensitive recommendations to parents.

Given that this analysis included numerous microsystem variables (e.g., child sex, parent education, household size, caregiver attitudes toward physical punishment), it is likely that broader systems may be able to explain some of the variability in the relationship between parental discipline behaviors and child outcomes. The remaining research questions in this dissertation focused on the chronosystem and macrosystem, exploring how these systems interacted with parental discipline behaviors to predict child outcomes. Indeed, these systems were able to provide some insight into why parental discipline behaviors are more strongly associated with child outcomes in some countries more than others.

Chronosystem and Parental Discipline Behaviors

After elucidating the associations between multiple forms of parental discipline and child outcomes, this dissertation examined whether the chronosystem, specifically child age, moderated these associations. While many studies include child age as a control variable when examining associations between parental discipline and child outcomes (e.g., Akmatov, 2010; Lansford et al., 2018), few studies have examined whether child age may be a moderator—that is, whether parental disciplinary behavior may be associated with children's *trajectories* of developmental outcomes in low- and middle-income countries. Developmental psychology

research suggests that, if children's development is hindered in early childhood due to violence or poverty, their development in later childhood is likely to be delayed as well (Feldman, 2004; Wellman & Gelman, 1992). This suggests that parental discipline behaviors may be associated with children's trajectories of development, for better or for worse. Due to the repeated cross-sectional sampling design of UNICEF MICS, this dissertation analysis could not examine *intra*-individual trajectories of development across time; rather, *inter*-individual trajectories were examined. Nevertheless, this analysis serves as a starting point from which the associations of parental discipline with child development across time may be understood.

Results revealed that parenting behaviors were associated with children's socio-emotional developmental trajectories across ages 3-5. Physically aggressive parenting behaviors (specifically shaking, hitting with an object, and hitting on the hand, arm, or leg), psychologically aggressive parenting behaviors (specifically name-calling), and taking away privileges were associated with disadvantageous developmental trajectories of child aggression and prosocial behavior. Specifically, in the absence of aggressive discipline, there was a negative association between children's age and aggression across ages 3-5 years. Further, in the absence of aggressive discipline, there was a positive association between children's age and prosocial behavior across ages 3-5 years. However, in the presence of aggressive discipline behaviors, the associations between children's age with aggression and prosocial behaviors remained largely level across the same developmental period.

Even in instances when aggressive parenting behavior was not strongly associated with child outcomes at 36 months, aggressive parenting behavior was associated with child outcomes by 59 months, right around the time when children are entering school. On average, by 59 months, children who had experienced physically and psychologically aggressive discipline

behaviors were more likely to be aggressive and less likely to get along with others compared to the children who had not experienced these discipline behaviors. Parental discipline is commonly viewed as a means by which parents prepare their children to engage in the outside world in a safe and functional way (Lansford, 2019); these results suggest that aggressive parenting may be associated with children entering school with less optimal developmental outcomes than had they not experienced aggressive parenting.

These results support a robust research literature showing aggressive parenting is not only disadvantageous for children in the short-term, but also has consequences for child socio-emotional development in the longer term (Afifi et al., 2017; Fergusson et al., 2008; Gershoff & Grogan-Kaylor, 2016; McLoyd et al., 2007). Specifically, parents who use aggressive discipline may be preventing the natural decline of aggression from occurring across children ages 3-5 years (Campbell et al., 2006). Likewise, parents who use aggressive discipline may be preventing the natural increase of prosocial behavior from occurring across children ages 3-5 years (Jambon et al., 2019). Of course, future research will need to replicate these results with prospective longitudinal designs to determine whether such within-person conclusions can be made. Existent multi-country studies using longitudinal designs have primarily focused on higher-income contexts (Gershoff, 2002) and tend to control for child age, rather than examining it as a moderator (Lansford et al., 2016). This dissertation serves as a starting point from which researchers can now consider the relationship that parenting has with early childhood socioemotional trajectories in low- and middle-income countries. Such a line of inquiry may provide further support for policy changes such as country-level corporal punishment bans.

These results also align with parent education guidelines conveyed in the Positive Discipline in Everyday Parenting (PDEP) program (Durrant, 2020). The first module of PDEP

teaches participants that positive discipline (i.e., nonaggressive discipline) assists parents in fulfilling their long-term goals for their children, while aggressive discipline behaviors are harmful in the longer term (Durrant, 2016). Results from this dissertation corroborate the latter statement and suggest that aggressive parenting behaviors are not advantageous to children's behavioral and social development during the toddler years. Indeed, if parents have the goal of their children being less aggressive and more prosocial by the time they enter primary school, aggressive discipline behaviors will not help parents arrive at that goal.

When parents shake or hit their children, they may succeed in stopping an undesired behavior and believe that they are setting appropriate limits with children and are raising their children to respect authority (Boydell et al., 2017; Klevens et al., 2019). Many of these parents may be highly involved caregivers who care greatly about teaching their children correct behavior (Lachman et al., 2018). However, results from this dissertation suggest that shaking and hitting might result in the opposite of the well-intended effect—on average, by 59 months of age, children who were shaken or hit were *more* likely to kick, bite, or hit other children and adults and *less* likely to get along well with other children, compared to their peers who were not shaken or hit. These results suggest that implementing programs such as Positive Discipline in Everyday Parenting (PDEP), which helps parents focus on their long-term goals for child development, will likely be important for families in low- and middle-income countries. As the PDEP manual appropriately states, "…hitting will only teach your child the opposite of what you want her to learn in the long run" (Durrant, 2016, p. 20).

Similar to physical and psychological forms of aggression, taking away privileges had detrimental associations with child socioemotional outcomes over time. On average, by 59 months of age, children who had privileges taken away were *more* likely to kick, bite, or hit

other children or adults compared to their peers who did not have privileges taken away.

Interestingly, at 36 months, children who had privileges taken away had nearly the exact same

odds of aggression as children who did not have privileges taken away. Therefore, these results

suggest that taking away privileges may be somewhat insidious, having detrimental associations

with child aggression longer term. These results support a prior study that examined over

200,000 children in low- and middle-income countries and found taking away privileges to be

associated with decreased levels of child prosocial behavior and higher levels of child aggression

and distraction (Grogan-Kaylor et al., 2021). Compared to the literature on physically aggressive

forms of discipline, the literature examining the associations of taking away privileges with child

outcomes is still in its nascency. Therefore, while these results on their own may not merit

interventionists steering parents away from taking away privileges, these results signal that

further research is needed on this parenting behavior in LMICs.

Inequality-Adjusted Human Development Index and Parental Discipline Behaviors

In addition to understanding how the chronosystem interacts with parenting to predict

child outcomes in low- and middle-income countries, this dissertation also examined whether

economic and social development shaped these relationships. Specifically, this dissertation

examined whether a country's level of human development (higher human development scores

indicating better health, education, and standard of living) moderated the associations linking

parental discipline behaviors to child outcomes. The bioecological model presents two

hypotheses that are relevant to this analysis: 1) The power of the proximal process to *actualize*

children's developmental potential will be stronger in *advantaged* and stable environments

compared to more disadvantaged and disorganized environments (Bronfenbrenner & Morris,

2006; p. 819). The bioecological further posits that 2) if children are exposed to developmental

resources in proximal processes that they are not exposed to in other settings in their lives, then the power of proximal processes to *actualize* developmental potential will be greater is *disadvantaged* environments (Bronfenbrenner & Morris, 2006; p. 819). Using these principles, one may expect that aggressive parenting would be more detrimental to child outcomes when human development scores are higher, as proximal processes may be more influential in a stable and organized environment. At the same time, nonaggressive parenting may be more beneficial to child outcomes when human development scores are low, because it exposes children to advantageous developmental resources (perhaps emotional regulation and socialization) that they do not receive in other settings.

Largely aligning with bioecological model principles, the current findings suggested that aggressive parenting behaviors were more strongly associated with child outcomes when human development scores were *high*. When human development scores were low, children were likely to be aggressive and easily distracted, regardless of parental discipline behaviors. This suggests that, when the country-level health, education, and standard of living was lower, the larger economic inequalities were so highly associated with child outcomes that disciplinary behavior had relatively little association with child outcomes. However, when country-level health, education, and standard of living were higher, the power of the immediate environment of parenting appeared to be unlocked, such that abstaining from aggressive parenting was associated with lower odds of children being aggressive or easily distracted.

Broadly, these results suggest that, for abstaining from aggressive parenting to be strongly associated with beneficial child outcomes, the country's overall human development needs to be high. From an interventionist perspective, this would suggest that, for anti-corporal-punishment parenting interventions to improve child developmental outcomes in a country with a

lower human development score, efforts are needed to improve the country's education access and attainment, life expectancy, and standard of living. This also suggests that, while solely providing parenting interventions in countries where human development is high may result in positive child outcomes, administering these interventions alone in countries where human development is low may not result in changes in child development, unless these interventions are multilevel (i.e., intervening at the micro- *and* macrosystem levels).

The Triple-P Positive Parenting Program (Sanders, 1999) is a notorious "multilevel" parenting intervention. Triple-P has five levels of intervention with increasing levels of population influence—ranging from intensive support for families with complex concerns (e.g., partner conflict, mental health issues) to a universal high-impact communication campaign that aims to encourage parental help-seeking and expand the reach of positive parenting interventions (Sanders, 1999). Systematic reviews and meta-analyses suggest Triple-P improves parent-child interactions in high-income countries; the program also appears to be effective in some low- and middle-income countries, although the evidence is sparser (Hastings et al., 2012; Heinrichs, 2008; Knerr et al., 2013). While Triple-P is "multilevel" in the sense of its program influence, the program itself is primarily focused on changing the microsystem—the parent-child relationship dynamic. Results from this dissertation suggest such parenting programs may need to occur in conjunction with additional macrosystem interventions when the country's human development index is low.

A robust line of literature, especially from micro- and macroeconomics, has introduced multiple lines of intervention from which to improve country-level indices of human development (Ifionu & Olieh 2016; Neumayer, 2001; Saad, 2010). Some researchers argue that an effective way to increase a country's level of human development is to focus on poverty

reduction (Arimah, 2004). This view rests on the premise that the relationship between individual-level capabilities and income is steepest at the lowest levels of income (Anand & Ravallion, 1993, p. 141); therefore, when absolute poverty is reduced, overall human development (e.g., education, life expectancy, health) flourishes. According to the Brookings Institution (Reeves, 2015), there are two primary anti-poverty strategies: 1) raising the incomes of those with low income, and 2) reducing the effects of having low income.

Interventions and policies that focus on the first strategy (i.e., focusing on individual income) typically focus on putting money into the pockets of those with the lowest income in a country. One commonly used income supplement strategy is cash transfers, meaning cash payments provided by formal institutions to help individuals meet their minimum consumption needs. A recent systematic review examined the effects of unconditional cash transfers on human development outcomes (health services use, mental health, school attendance, access to food) in low- and middle-income countries and found that unconditional cash transfers reduce the likelihood of illness, increase the likelihood of attending school, and have beneficial effects on food security (Pega et al., 2017). While these results are encouraging, the study noted that the evidence for cash transfers to impact other aspects of human development—such as the use of health services and adult employment—is minimal. Interestingly, the review also found that unconditional cash transfers tend to have little impact on parenting quality (Fernald & Hidrobo, 2011; Paxson & Schady, 2010). Taken these results together with the results from this dissertation, the joint focus on poverty reduction via cash transfer *and* micro-level parenting interventions may be beneficial to child development in countries with very low human development indices.

Interventions that use the second strategy of poverty reduction (i.e., reducing the effects of low income) focus on improving public services, which then reduce the detrimental impacts of poverty and the "clustering" of disadvantage (i.e., disadvantages occurring on multiple dimensions, such as school and home life). Examples of such interventions in LMICs include improving schools in low-income communities (Ganimian & Murnane, 2014); strengthening public transportation (Gunaruwan & Jayasekera, 2015); increasing access to affordable housing (Smit et al., 2011); and implementing universal or subsidized health insurance (Fox & Reich, 2015). The United Nations Children's Fund supports such strategies and frames these efforts as a "cross-sectoral approach" to tackling poverty that looks beyond monetary poverty (UNICEF, 2022). UNICEF specifically promotes social assistance benefits that increase living standards and promotes social transfer systems that connect children and adolescents to health care, education, and job training—all aspects that help to increase a country's overall human development. Results from this dissertation suggest that parenting researchers and interventionists may need to examine the cross-sectoral approaches that countries have in place when considering the implementation of anti-corporal punishment parenting interventions—as parenting interventions may be associated with better outcomes when such cross-sectional efforts are in place.

While the findings from this dissertation support the need for macroeconomic improvements in conjunction with the absence of aggressive discipline behaviors, the results also suggest that parenting behaviors are associated with child outcomes across the Inequality-Adjusted Human Development Index spectrum. Verbal reasoning and redirection in the household were especially beneficial to child prosocial behavior when human development scores were *low*. This means positive parenting behaviors were predictive of children getting

along with others when families were living in the most disadvantageous environments. These results align well with Bronfenbrenner and Morris's (2006) supposition that, when children are given resources in a proximal process that they are not granted in other settings, these advantageous proximal processes will be greater in *disadvantaged* environments. It is possible that parents who use verbal reasoning and redirection in countries with a low IHDI received social development skills that they were not receiving in other environments, perhaps due to limited access to schooling, childcare, and other social resources (Wachs & Rahman, 2013).

These results suggest that programs such as Positive Discipline in Everyday Parenting (Durrant, 2020) and Parenting for Lifelong Health (World Health Organization, 2020), which teach parents how to engage in effective verbal reasoning and redirection with young children, may be especially helpful for child social development in countries where IHDI scores are the lowest. Programs that teach "positive" forms of discipline may be most beneficial to child social outcomes in highly disadvantaged macroeconomies. However, while verbal reasoning was especially beneficial to child *prosocial* outcomes in low-IHDI countries, earlier results showed that parenting behaviors were only associated with child *aggression* and *distraction* outcomes in high-IHDI settings. Therefore, to improve child development wholistically—social, behavioral, and cognitive development—macro-level interventions that improve country-level educational attainment, quality of life, and standard of living *and* micro-level parenting interventions that decrease aggressive discipline behaviors and increase non-aggressive discipline behaviors will likely be needed.

Results from this dissertation emphasize the importance of positive microsystem influences (i.e., nonaggressive parenting) within the context of a low-resourced macrosystem; however, existing research suggests that a positive mesosystem influence—namely,

neighborhood and community collective efficacy—may have similar beneficial effects on child outcomes. Among a sample of low-income families in the United States, one study found neighborhood collective efficacy was associated with lower child behavior problems after controlling for aggressive parenting, and that these effects were particularly strong for younger children (Ma & Grogan-Kaylor, 2017). Similarly, neighborhood social cohesion and trust have been shown to be predictive of decreased Child Protective Services involvement among low-income U.S. families after controlling for parental spanking (Ma, Grogan-Kaylor, & Klein, 2018). Finally, among families in urban settings in the United States, a study found that higher rates of neighborhood crime and violence predicted higher levels of child aggression after controlling for aggressive parenting (Ma, Grogan-Kaylor, & Lee, 2018).

These results signal that mesosystem factors, such as community social cohesion and collective efficacy, may be important to child development in low-resourced contexts. Aligning with Bronfenbrenner & Morris (2006), the advantages of a cohesive community system may buffer the effects of living in an under-resourced macrosystem. However, such hypotheses need to be tested and applied in low- and middle-income countries. As UNICEF MICS data does not have community and neighborhood-level measures of efficacy and cohesion, researchers that study parenting in LMICs may need to prioritize such measures to better understand the mesosystem resources that could increase child socioemotional development within the context of low-resourced macrosystems.

Gender Inequality Index and Parental Discipline Behaviors

The final analysis of this dissertation examined whether a country's level of gender inequality (i.e., female disadvantage in reproductive health, labor market participation, attaining a secondary education, and parliamentary representation) affected the relationship between

parenting behaviors and child outcomes in low- and middle-income countries. Prior research has shown that gender inequality has deleterious effects on both male and female child development—with gender inequality being associated with lower educational attainment, higher rates of violence, and decreased labor market participation for women; higher gang violence, recruitment into armed forces, and child labor rates for men; and increased mental health problems and hygiene and sanitation concerns for men and women (Deuchar & Weide, 2017; Klasen & Lamanna, 2009; UNICEF, 2021c). The World Health Organization has identified gender inequality as a salient risk factor for child maltreatment, as gender inequality tends to be associated with higher rates of child physical abuse and neglect (Fiala & LaFree, 1988; Klevens & Ports, 2017; Runyan et al., 2022). However, the extent to which gender inequality *interacts* with parenting to predict child developmental outcomes has not yet been examined in the low- and middle-income country context; this dissertation responds to this gap.

Results from these analyses mirrored the results from analyses involving country-level human development. Specifically, aggressive parenting behaviors were more strongly associated with child outcomes when gender inequality was *low*. And, when gender inequality was high, children were likely to be aggressive and easily distracted, regardless of parental discipline behaviors. This suggests that, when there was greater country-level female disadvantage, gender inequality was so highly associated with child outcomes that parenting behaviors had relatively little association with child outcomes. However, when country-level gender inequality was lower (i.e., more gender parity), the power of parenting appeared to be unlocked, such that abstaining from aggressive parenting was associated with lower odds of children being aggressive or easily distracted.

These results suggest that, for abstaining from physical punishment and psychological aggression to be strongly associated with child outcomes, the country-level gender inequality needs to be low. From an intervention standpoint, this would suggest that, for anti-corporal-punishment parenting interventions to improve child developmental outcomes in a country with high gender inequality, efforts are needed to improve country-level female reproductive health (i.e., higher maternal mortality and lower adolescent birth rate), female labor force participation, female attainment of secondary education, and female parliamentary representation. This also suggests that, while solely providing parenting interventions in countries where gender inequality is low may result in positive child outcomes, administering micro-level interventions alone in countries where gender inequality is high may not result in changes in child development, unless these interventions are coupled with macro-level interventions that increase female empowerment.

While this dissertation did not examine the mechanisms linking gender inequality and parenting behaviors to child outcomes, there are several possible reasons behind such interactions. Using the tenants of the family stress model (Conger & Donnellan, 2007), it is possible that having unequal access to education, government influence, and labor force participation may affect women's (i.e., the primary caregiver's) mental health and parenting, which then influence child outcomes. However, the results from this dissertation suggest that, when country-level gender inequality is high, children are likely to be aggressive and distracted, regardless of aggressive parenting. Therefore, it is possible that poorer maternal mental health is directly affecting child outcomes (as Conger et al. 2002 found in their analysis of the family stress model), as opposed to aggressive parenting behaviors affecting child outcomes. Research suggests that, when mothers' mental health suffers, the family environment can become more

inconsistent and unpredictable, which increases a child's risk for developmental setbacks (Baker & Iruka, 2013). In this case, it may not be the parental discipline behavior on its own, but the family environment as a whole, that affects children's outcomes in countries with high gender inequality.

Looking outside the parent-child microsystem, research suggests that countries with high levels of gender inequality tend to have higher rates of gender-based violence (World Health Organization, 2022). From a social learning theory perspective (Bandura, 1977), it is possible that children in these countries may be exposed to domestic violence, gender-based discrimination, and other forms of gender-based violence at home and within their community at higher rates than children in countries with more gender parity (Powers et al., 2017). Living in environments where this type of violence is modeled may make children more aggressive themselves, regardless of the presence or absence of aggressive disciplinary behaviors (Grace, Seng, & Eng, 2020). Along a similar vein, it is possible that in countries where gender-based violence and discrimination is normalized, overall violence against children is also normalized and occurs more frequently (Briggs & Cutright, 1994). Therefore, in countries with high levels of gender inequality, children may be experiencing higher levels violence in many systems (e.g., school, daycare, neighborhood), thereby diminishing the ability to find a statistically significant effect of aggressive parenting on its own. Using the tenants of the bioecological model (Bronfenbrenner & Morris, 2006), the meso- and macrosystem levels of discrimination and violence may be so strong such that parental discipline behavior does not have the opportunity to actualize children's developmental potential.

While future research will need to explore the mechanisms linking gender inequality to child development, results from this dissertation suggest that increasing female empowerment

will likely benefit child wellbeing. From an interventionist perspective, this dissertation suggests that female empowerment messages are also child welfare messages—that female empowerment helps to actualize children's developmental potential. Researchers and practitioners who care about parent-child relationships and child wellbeing in low- and middle-income countries will also need to consider gender inequality, as the closer a country gets to gender parity, the more effective that parenting intervention may be in that country.

The United Nations Children's Fund administered its first Gender Policy in 2010, which outlined UNICEF's strategy for achieving global gender equality and underscored its support for evidence-based programs and policies that promote gender equality. UNICEF recently released its 2021-2030 Gender Policy (UNICEF, 2021d), which "…commits to a bolder and more ambitious vision for gender equality and the empowerment of all children, adolescents, and women" with support for programs that "…remove the underlying structural barriers [that] perpetuate inequalities." One of the main strategies to achieve gender inequality in the 2021-2030 Gender Policy is positive gender socialization, meaning the establishment of equitable norms during childhood and adolescence. Numerous UNICEF programs have been put in place across low- and middle-income countries to advance positive gender norms; an overview of these programs can be found in UNICEF's 2020 report of their gender-norm programs (UNICEF, 2020).

One UNICEF gender socialization program, administered in Nepal, aimed to change norms around fathers' limited involvement in childcare and housework and promoted the gender-equal treatment of sons and daughters. This program also includes radio and TV dramas, which depict fathers engaging in equitable sharing of domestic work and using positive parenting with boys and girls. While the evaluation of this program is still ongoing, UNICEF researchers are

measuring whether the intervention increases the percent of male caregivers who play or tell stories to their children, increases the amount of housework male caregivers participate in, and decreases maternal stress. Thus far, most of the evidence collected has been qualitative. UNICEF reports that, after the administration of the intervention, a father stated, "The other day, when I scolded [my son] to do his homework, he reminded me that I shouldn't be doing that. He told me, 'Daddy, remember what they said on the radio?'" (UNICEF, 2020, p. 17). This is an example of a program that is multilevel in nature—it aims to challenge and shift macrosystem norms that perpetuate gender inequality, while also promoting positive parenting practices in a culturally sensitive manner. Such efforts algin very well with the results from this dissertation, which suggest that gender inequality will need to be addressed in order to unlock the beneficial effects of parents abstaining from aggressive forms of discipline.

While interventions are needed to improve equality in the macrosystem, some results from this dissertation suggest that certain parenting practices still have beneficial associations with child outcomes, even in the context of a disadvantageous macrosystem. As seen in the results from this dissertation, verbal reasoning and redirection were most beneficial to child prosocial behavior in countries with the lowest human development scores. Similarly, results suggest that verbal reasoning was most beneficial to child prosocial behavior in countries with the highest levels of gender inequality. Again, positive parenting was shown to have the highest association with child social development in the most disadvantageous environments. These results align with the bioecological model and suggest that, when gender inequality is high, parental verbal reasoning may teach and model healthy social interactions that children are not observing in other environments (Bronfenbrenner & Morris, 2006; Bandura, 1977). However, given that these analyses were restricted to households with children under 5 years old, future

research should examine whether such advantages persist as children age and spend increasingly more time engaging with other meso- and macrosystems (Sameroff, 2009).

The United Nations Children's Fund (UNICEF, 2021e) notes that violence against women and violence against children tend to take place under the same roof (Guedes et al., 2016). Because of this, UNICEF states that the most effective interventions in low-resourced settings will acknowledge that gender-based and child-directed violence are interconnected. An example of such a program is Bandebereho, which was administered as a randomized controlled trial in Central Africa. This program is structured as a discussion-based curriculum for current and expectant couples that lasts for 15 sessions. The program aims to improve father involvement in maternal and child health, family planning, and caregiving. The curriculum also includes messages and psychoeducation aimed to prevent domestic violence. An evaluation of the program found that the program resulted in a reduction of physical punishment against children, greater male involvement in household tasks, and a reduction of female-reported instances of domestic and sexual violence (Doyle et al., 2018).

While programs such as Bandebereho appear to increase gender parity in the home environment (World Bank, 2019), it is unclear whether such interventions will have a macrolevel influence on the aspects of gender inequality that were measured in this dissertation—namely women's mortality and adolescent birth rate, secondary educational attainment, parliamentary representation, and labor force participation. A recent study (Goldenberg et al., 2018) suggest that single interventions are unlikely to reduce female mortality in low- and middle-income countries. Instead, improving the quality of pregnancy-related care in healthcare systems are necessary. Such improvements may include early testing for hypertension and proteinuria, increasing treatment of infections such as syphilis, and increasing maternal vaccination rates

(Oza et al., 2015). In terms of decreasing adolescent birth rates in low-income countries settings, studies have found that providing cash transfers directly to adolescents (Baird, 2009; Gulemetova-Swan, 2009; Stecklov, 2006) and administering programs that lower barriers to and encourage school attendance—for example, providing free uniforms and offering cash conditional on school attendance (Duflo, 2011)—seem to have beneficial effects.

Another study of 63 low- and middle-income countries (Hughes, 2009) found two particularly strong correlates of women's parliamentary representation: 1) civil war that contests the political system or alters the composition of government in a way that creates opportunities for women, and 2) international linkages, meaning the presence of international non-governmental organization and treaty ratifications. Interestingly, another analysis using data from 120 countries found that women's participation in the workforce is highly associated with women's parliamentary representation (Stockemer & Byrne, 2011). Based on the findings in this dissertation, it is possible that macro-level changes in healthcare, governments, and workforce that promote gender equity may be needed in order for micro-level interventions to have the highest possible association with child developmental outcomes.

Limitations

The results of this dissertation should be interpreted while considering its limitations. Because the data were cross-sectional, all interpretations are limited to associations. This means that for all analyses involving regression modeling, the directionality of associations may be reversed, wherein poor child socioemotional behaviors precede disciplinary action. Appropriate longitudinal research design with analytic methods such as fixed-effects regression (which helps with ruling out the effects of unobserved confounders) and cross-lagged models (which helps establish directionality of associations) will be needed to strengthen researchers' ability to make

intervention recommendations. For the analysis testing whether parental discipline interacted with the chronosystem (i.e., child age), the lack of repeated-measures data means that the links between parental discipline behaviors and developmental trajectories are limited to cross-sectional associations. Future research will need to replicate these analyses with panel data to establish temporal precedence of child outcomes and parenting behaviors. With panel data, future research could also examine how parental discipline behaviors are associated with within-child changes (i.e., *intra*-individual changes) in socioemotional development across time. Additionally, the regression analyses conducted in this dissertation only analyzed households with children under 5 years old and cannot provide insight into associations between parenting behaviors and child outcomes among households with only older children.

A strength of the analyses involving social and economic development and gender inequality was the illumination of interactions between macro- and micro-processes. However, the main moderator variables (i.e., human development and gender inequality) were large indexes with multiple dimensions. The Inequality-Adjusted Human Development Index included data related to life expectancy, educational attainment, and Gross National Income; the Gender Inequality Index included data related to maternal mortality, adolescent birth rate, female secondary education attainment, female parliamentary representation, and female labor force participation. Although the incorporation of the various dimensions within these indexes is mathematically elegant, they lack interpretative specificity. Future research may need to examine which specific dimensions of each of these moderators may be driving the parental discipline-macrosystem interaction. Relatedly, the size of many parental discipline-macrosystem interactions were relatively small. This is partially because the IHDI and GII were entered into the model as percentages (i.e., the regression captures a 1% increase in IHDI and GII); therefore,

referencing the interaction graphs is needed to better understand the magnitude of the interactions. Further, as macro-micro interacts are difficult to capture generally, future research will need to replicate these analyses to determine under what circumstances IHDI and GII may meaningfully affect how parenting relates to child outcomes.

Nearly all variables used in this dissertation are based on self-report data, which may have been susceptible to social desirability bias, self-presentation bias, or other forms of inaccurate reporting such as difficulty recalling parenting behaviors that occurred in the past month (Memmott-Elison et al., 2020). Further, the parental discipline variables were dichotomous, which precludes the ability to capture the frequency or severity of discipline behaviors. Relatedly, the child outcome variables were also dichotomous, which means the results cannot speak to the severity of the child outcomes examined.

Contributions to Theory, Research, and Practice

These findings yield important contributions to the scientists and practitioners, particularly those in social work, psychology, and public health fields. First, this dissertation contributes to the developmental psychology literature by examining parenting outside of Western, Educated, Industrialized, Rich, Democratic contexts (or "WEIRD" contexts, as defined by Henrich et al., 2010). While numerous scholars have dedicated their lines of research to examining parenting in lower-resourced international contexts (for example, Drs. Bornstein, Deater-Deckard, Dodge, Durrant, Gershoff, Grogan-Kaylor, Lansford, Lee, and McCoy to name a few), this empirical work is still in its nascency compared to the study of parenting in WEIRD contexts. This gap poses significant problems for the research-to-practice pipeline and prevents low- and middle-income countries from following evidence-based practices for improving child socio-emotional development.

Further, these gaps prevent LMICs from following the guidelines of the United Nations Convention on the Rights of the Child (UNCRC), which call for nation states to provide funding for programs that will promote the use of nonaggressive discipline. Specifically, the UNCRC states that prevention measures for families and communities should include, "Supporting parents and caregivers to understand, embrace, and implement good child-rearing, based on knowledge of child rights, child development and techniques for positive discipline in order to support families' capacity to provide children with care in a safe environment" (UNCRC, 2011, p. 18-19). It stands to reason that if researchers are still unsure as to which nonaggressive discipline strategies are most effective in LMICs, programs will be left unsure as to which strategies to promote. This dissertation gave insight into the harmful developmental consequences of psychological and physical forms of aggression in LMICs, and suggest that verbal reasoning and redirection (but not taking away privileges) appear to be beneficial to child development in LMICS—even the LMICs with the lowest levels of human development and highest levels of gender inequality.

Second, this dissertation contributes to the social work literature by using a person-in-environment perspective to understand how social and economic inequalities may interact with parenting behaviors and, subsequently, associate with child socio-emotional outcomes. Social work has a long history of advocating for the empirical examination of social injustices and children's rights, especially among vulnerable, oppressed, and impoverished populations. However, social work has historically lacked the theoretical and statistical rigor that is required to unveil the proximal processes that explain child developmental outcomes. By combining social work perspectives of cultural sensitivity and social justice with the theoretical and methodological strengths of developmental psychology, this dissertation advocates for a

multilevel approach to parenting and child development. Specifically, findings reveal that addressing social and economic inequalities is a necessary part of achieving positive developmental outcomes for children in LMICs.

Finally, these dissertation findings have both theoretical and practical contributions to the scientific community more broadly. Current theoretical and quantitative work makes use of direct-effect conceptualizations of parenting, with broader macrosystem influences directly predicting parenting behaviors, which then directly predict child outcomes (e.g., Conger et al., 1994; UNICEF, 2019b). Further, much empirical work makes use of single-level conceptualizations of parenting, solely focusing on one community or country, discounting the variability in parenting that could occur within and between geographical areas. Using multilevel regression techniques that include theoretically meaningful interaction effects, these dissertation findings more accurately reflect the bioecological framework—that is, these models acknowledge both *clustering* that occurs within and between countries and examine *proximal processes* occurring between the microsystem and larger macrosystem influences. Such techniques allow for the elucidation of the multiple factors that influence child socio-emotional development—from child- and parent-level factors, to country-level social and economic inequalities. Such conceptualization is ecologically valid and reflects the multilevel and multi-system environments in which parents and children find themselves globally.

Conclusions

Guided by the bioecological model of human development and the family stress model, this dissertation examined the prevalence, consequences, and ecological influences of 11 parental discipline behaviors in low- and middle-income countries. Results revealed high amounts of variability in the use of parental discipline behaviors in households across countries. While few

parents solely relied on aggressive forms of discipline, most parents used a combination of aggressive and non-aggressive discipline behaviors. When all 11 parental discipline behaviors predicted child outcomes, analyses revealed that psychological aggression, physical aggression, and taking away privileges were disadvantageous to child development, while verbal reasoning and redirection were advantageous to child outcomes. These relationships did credibly vary across countries, although no instance of physical aggression was found to be credibly beneficial to any child outcome across any country.

When analyses examined how parental discipline behaviors were associated with child development between children ages 3 and 5, results showed that psychological aggression, physical aggression, and taking away privileges were associated with disadvantageous developmental trajectories of child aggression and prosocial behavior. When analyses examined whether the Inequality-Adjusted Human Development Index and Gender Inequality Index moderated the associations between parental discipline behaviors and child outcomes, results revealed that psychological and physical aggression were most detrimental to child outcomes in *advantageous* environments, whereas verbal reasoning and redirection were most beneficial to child outcomes in *disadvantageous* environments. This dissertation underscores the importance of eliminating psychological and physical aggression and increasing the use of non-aggressive discipline—specifically verbal reasoning and redirection—in low-resourced contexts. This dissertation also suggests that, for parenting interventions to be strongly associated with child outcomes in low- and middle-income countries, gains will need to be made in country-level human development and gender parity. Cross-sectoral interventions that address the parent-child relationship and the macrolevel social context will likely improve child development in low- and middle-income countries.

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TABLES

Table 1. *Descriptive Statistics of Study Variables.*

	Research Questions 2, 4, and 5 (N = 208,156 surveys, 63 countries)							Research Question 3 (N = 99,139 surveys, 63 countries)						
	ICC	N	%	M	SD	Min	Max	ICC	N	%	M	SD	Min	Max
Child Outcomes														
Aggression	11.91	80,145	38.50					11.93	35,397	35.70				
Distraction	13.13	103,208	49.58					13.05	48,701	49.12				
Getting along with others	13.91	187,718	90.18					13.62	89,938	90.72				
Psychological Aggression														
Shouted at child	15.74	136,917	65.85					15.45	62,258	62.86				
Called child names	21.50	63,671	30.61					24.63	23,994	24.22				
Physical Aggression														
Shook child	18.12	70,172	33.77					18.95	31,263	31.58				
Spanked child	9.91	89,079	42.84					9.75	44,087	44.51				
Hit/slapped child on arm/leg	23.93	55,484	26.87					23.81	25,712	26.25				
Hit child with object	32.00	41,769	20.08					34.04	17,336	17.50				
Hit/slapped child on face/head/ears	28.40	35,114	17.01					30.28	14,331	14.63				
Beat child as hard as one could	41.58	11,706	5.63					40.52	4,342	4.39				
Non-Aggressive Behaviors														
Took privileges away from child	10.96	94,681	46.22					10.93	44,151	45.22				
Explained why behavior was wrong	10.59	164,853	79.24					11.87	78,425	79.16				
Gave child something else to do	15.84	87,942	42.32					20.68	40,915	41.34				
Maternal Education														
None		69,389	33.39						26,351	26.62				
Primary		62,722	30.18						28,696	28.98				
Secondary-plus		75,684	36.42						43,961	44.40				
Paternal Education														
None		41,186	25.11						15,742	20.43				
Primary		49,467	30.16						21,996	28.55				
Secondary-plus		73,386	44.74						39.302	51.02				
MICS Round														
Round 4		87,982	42.27						42,442	42.81				
Round 5		120,174	57.73						56,697	57.19				
Wealth Score														
Poorest		54,640	26.53						23,818	24.45				
Second poorest		45,117	21.90						20,800	21.35				
Middle		39,459	19.16						18,631	19.12				
Fourth poorest		35,718	17.34						17,835	18.31				
Richest		31,055	15.08						16,346	16.78				
Reference child is female		103,126	49.54						48,663	49.09				
HH is female		35,189	16.91						18,886	19.05				
HH is biological parent		155,650	74.78						71,450	72.07				
Believes child needs physical punishment		67,400	32.93						68,628	70.42				

Urban community	85,631	41.14					44,534	44.92			
Reference child age (years)			5.65	3.41	1	17					
Household members			6.65	3.49	2	50			5.58	2.76	2	50
Gender Inequality Index			52.22	12.78	14.9	71.4					
Inequality-Adjusted HDI			43.50	14.24	21.2	74.7					
Focal child age (months)									47.15	6.88	36	59

Note: HDI = Human Development Index. Number of household members was capped at 50. HH = survey respondent, typically the head of household. ICC = Intra-class correlation coefficient.

Table 2. *Prevalence of 11 forms of parental discipline across 58 low- and middle-income countries (N = 615,844).*

Country	N	1	2	3	4	5	6	7	8	9	10	11
Afghanistan	17,989	51.45	29.53	49.01	40.96	32.39	16.53	31.90	13.49	47.57	59.77	44.35
Algeria	20,736	78.86	28.48	45.48	49.76	28.98	11.82	19.97	6.45	57.86	85.75	53.48
Argentina	16,675	61.93	16.31	23.90	30.20	15.14	3.33	7.04	2.52	56.82	87.42	53.07
Bangladesh	42,629	70.65	15.56	36.96	41.20	18.79	11.38	23.04	3.21	67.55	69.96	45.06
Barbados	984	59.34	9.05	5.54	32.80	39.42	21.99	4.18	2.23	57.39	74.88	53.62
Belarus	3,676	55.68	17.07	8.30	30.85	--	2.29	--	0.06	72.55	95.57	90.01
Belize	3,657	46.84	11.42	12.49	27.44	23.93	20.48	4.69	1.53	54.84	81.95	51.58
Benin	14,155	81.61	54.23	31.03	53.77	37.83	30.84	17.65	7.92	41.62	80.20	32.00
Bosnia and Herzegovina	2,962	39.35	7.51	15.92	30.24	11.66	5.47	3.80	1.80	45.30	86.58	48.71
Cameroon	8,704	76.12	41.56	33.81	45.73	16.36	32.22	18.49	3.04	46.76	76.50	38.89
Central African Republic	12,392	76.35	61.17	50.58	55.02	38.24	29.35	33.70	7.65	--	89.54	40.12
Chad	19,839	59.46	43.19	49.82	50.80	36.32	41.15	36.80	11.44	76.26	82.98	52.26
Costa Rica	3,474	27.68	9.56	7.20	19.50	8.81	8.91	1.54	1.77	53.83	88.88	37.16
Côte d'Ivoire	10,556	80.30	31.15	44.55	50.55	32.68	15.20	12.53	5.98	38.28	81.36	29.65
Cuba	6,294	18.80	5.78	9.84	20.40	9.77	1.30	1.71	0.68	31.72	63.74	39.26
Dominican Republic	23,041	51.08	12.00	17.14	28.53	7.57	14.59	2.60	0.64	50.06	68.73	21.57
El Salvador	9,217	23.80	13.78	6.49	27.50	16.04	11.86	2.63	0.45	45.25	81.08	26.29
Eswatini	3,959	77.35	18.20	17.02	19.03	11.57	56.85	5.30	5.13	23.40	77.06	39.69
Ghana	10,527	85.00	41.36	21.73	49.27	34.05	50.20	9.90	6.80	26.71	83.85	18.74
Guinea	8,749	75.35	36.56	29.24	59.53	34.20	31.10	5.86	6.88	59.54	82.36	39.33
Guinea Bissau	8,358	60.94	28.07	25.67	40.77	27.92	31.50	10.98	8.30	13.52	69.90	19.61
Guyana	4,022	55.71	11.02	18.53	30.37	28.18	16.97	5.51	1.15	41.70	78.70	35.80
Iraq	43,412	71.07	35.93	42.88	35.15	32.82	9.41	25.40	3.93	42.36	84.18	47.90
Jamaica	2,950	68.08	20.60	27.63	43.69	39.73	26.15	3.89	2.15	55.47	82.68	41.63
Kazakhstan	8,870	42.49	7.02	8.46	18.98	1.95	0.76	0.83	0.11	42.11	86.15	73.95

Kosovo	2,681	53.84	24.06	9.77	13.29	9.24	3.68	5.31	0.35	35.71	83.47	62.31
Kyrgyzstan	5,651	44.62	9.21	23.55	27.20	9.67	1.89	2.22	0.36	64.69	86.93	77.89
Laos	17,578	63.65	39.13	11.17	30.77	25.96	10.68	6.53	1.12	34.05	80.56	32.80
Macedonia	1,997	51.65	19.84	32.16	36.87	12.38	1.15	4.44	0.47	47.29	93.47	72.28
Malawi	23,976	62.84	18.78	27.05	23.61	6.51	13.61	6.05	0.42	22.90	80.12	44.05
Mali	19,307	58.88	38.22	27.97	34.99	17.68	17.41	12.09	4.44	46.17	65.83	36.15
Mauritania	12,510	65.84	42.26	48.98	48.58	36.07	27.87	22.23	10.66	60.13	71.31	47.35
Mexico	10,412	46.55	22.11	11.43	31.95	15.89	8.10	5.00	0.60	59.77	88.36	34.44
Moldova	3,360	66.63	18.09	29.45	36.13	3.55	3.72	1.93	0.26	51.71	94.39	58.57
Mongolia	10,464	31.03	19.51	13.26	18.47	8.13	1.94	3.48	0.84	20.90	77.98	35.14
Montenegro	1,919	66.61	8.81	14.33	16.93	2.80	12.55	2.19	0.09	41.58	76.76	39.94
Nepal	8,808	72.99	26.58	30.90	33.68	23.98	11.72	13.14	2.26	26.69	85.53	22.76
Nigeria	36,835	71.28	33.58	32.20	46.66	33.74	34.57	23.29	13.43	52.07	75.36	42.51
Panama	8,002	25.89	11.59	9.18	14.77	12.31	7.46	1.38	0.90	42.98	69.20	47.46
Paraguay	5,512	28.49	6.79	12.19	22.88	13.62	13.42	3.45	0.98	44.42	84.92	31.79
Republic of the Congo	11,575	67.51	50.41	43.29	45.39	39.27	24.10	26.14	7.10	52.03	64.93	32.65
Sao Tome and Principe	2,642	54.87	29.34	12.40	60.46	52.88	19.68	7.05	4.36	23.97	66.67	23.26
Serbia	3,296	38.72	5.43	2.91	15.26	1.97	0.43	0.64	0.03	43.68	90.92	48.41
Sierra Leone	11,744	67.78	36.45	30.03	31.82	28.15	27.34	9.76	12.65	46.70	79.66	34.90
St. Lucia	631	57.50	12.45	9.44	26.47	30.20	18.56	3.30	2.39	46.19	73.38	45.29
State of Palestine	9,930	86.51	40.36	43.25	47.06	49.50	14.14	21.08	5.45	43.60	91.64	61.46
Sudan	17,206	50.08	19.56	15.84	28.17	23.38	19.51	10.94	4.03	27.64	75.80	23.71
Suriname	4,884	78.80	35.88	21.88	39.81	32.10	16.79	8.11	4.81	51.45	84.80	51.20
Thailand	19,167	53.83	28.49	10.92	39.43	39.24	17.60	2.40	1.97	66.40	89.93	65.44
The Gambia	12,878	74.71	45.80	29.56	46.59	36.98	43.15	13.80	5.61	57.68	88.45	25.96
Togo	6,263	78.04	56.89	47.86	52.13	32.04	37.26	14.88	3.94	58.12	91.69	35.92
Trinidad and Tobago	2,232	66.07	10.36	14.26	31.84	30.22	18.13	2.79	0.99	62.91	86.73	46.55

Tunisia	4,792	87.35	46.23	38.33	55.25	34.82	16.13	22.99	15.86	49.35	90.44	64.30
Turkmenistan	4,824	24.25	10.16	3.00	12.39	1.83	0.93	0.85	0.30	39.47	91.65	74.55
Ukraine	4,876	54.91	9.89	10.24	23.16	3.43	1.74	0.93	0.02	64.08	93.99	79.93
Uruguay	2,361	46.40	12.67	15.56	17.28	2.36	0.29	2.29	0.41	59.57	79.00	51.40
Vietnam	5,749	53.24	16.22	2.30	34.80	10.53	12.51	1.90	0.15	38.29	90.26	39.72
Zimbabwe	13,955	43.97	26.64	15.34	6.98	8.14	24.75	4.20	1.09	35.76	70.76	32.69

Note: Dashes signify missing data. Prevalence estimates under columns 1-11 indicate the percentage of households where a form of discipline occurred. 1= Shouted, yelled at or screamed at the child; 2 = Called the child dumb, lazy or another name like that; 3= Shook child, 4=Spanked, hit or slapped the child on the bottom with a bare hand, 5=Hit or slapped the child on the hand, arm, or leg, 6=Hit the child on the bottom or elsewhere on the body with something like a belt, hairbrush, stick or other hard object, 7=Hit or slapped [child] on the face, head, or ears, 8=Beat child up, that is, hit child over and over as hard as one could, 9=Took away privileges, forbade something the child liked or did not allow the child to leave the house, 10= Explained why the child's behavior was wrong, 11=Gave the child something else to do.

Table 3. *Fixed effects from multilevel logistic regression model predicting child outcomes (N = 154,800 surveys, 60 countries).*

Variable	Aggression			Distraction			Gets Along		
	OR	LL	UL	OR	LL	UL	OR	LL	UL
Took away privileges	1.05	1.00	1.10	**1.08**	1.02	1.15	**0.94**	0.88	0.99
Explained why behavior was wrong	**0.92**	0.86	0.99	1.01	0.93	1.08	**1.30**	1.19	1.41
Redirected	0.99	0.96	1.03	1.05	0.99	1.10	**1.08**	1.01	1.17
Shouted at child	**1.20**	1.13	1.27	**1.08**	1.02	1.13	0.95	0.86	1.04
Called child names	**1.31**	1.22	1.40	**1.15**	1.09	1.21	**0.87**	0.79	0.94
Hit child on the face/head/ears	**1.22**	1.14	1.32	**1.06**	1.01	1.11	**0.86**	0.76	0.97
Hit child with object	**1.18**	1.10	1.27	1.00	0.93	1.08	0.97	0.89	1.07
Hit/slapped child on arm/leg	**1.13**	1.06	1.20	1.06	1.00	1.13	1.03	0.96	1.10
Spanked child	**1.13**	1.07	1.20	1.04	0.99	1.10	1.04	0.95	1.13
Beat child as hard as one could	1.11	0.99	1.24	1.05	0.96	1.15	**0.85**	0.74	0.98
Shook child	**1.19**	1.14	1.26	**1.09**	1.02	1.17	**0.83**	0.76	0.91
Selected child age	0.99	0.99	1.00	0.99	0.99	1.00	**1.01**	1.01	1.02
Selected child female	**0.89**	0.87	0.91	0.99	0.97	1.01	**1.09**	1.05	1.13
HH is biological parent	0.96	0.93	1.00	0.99	0.95	1.03	**1.07**	1.01	1.14
HH is female	1.02	0.97	1.08	1.02	0.97	1.07	0.97	0.88	1.06
Household members	**1.01**	1.01	1.02	1.00	1.00	1.01	0.99	0.99	1.00
Second poorest	1.00	0.96	1.03	0.95	0.92	0.98	**1.07**	1.02	1.12
Middle	1.00	0.96	1.03	0.98	0.95	1.02	**1.15**	1.09	1.22
Fourth poorest	1.00	0.96	1.04	0.96	0.92	0.99	**1.20**	1.13	1.28
Richest	0.96	0.92	1.00	**0.91**	0.87	0.95	**1.44**	1.34	1.55
Urban community	0.99	0.97	1.02	1.02	1.00	1.05	**0.91**	0.87	0.95
MICS round 5	**0.82**	0.79	0.86	**1.05**	1.01	1.09	**0.70**	0.66	0.76
Child needs physical punishment	1.03	1.00	1.05	**1.07**	1.04	1.09	1.05	1.00	1.09
Mother primary education	1.02	0.99	1.06	**1.08**	1.04	1.11	**1.10**	1.05	1.15
Mother secondary education	0.95	0.91	0.99	1.01	0.97	1.05	**1.24**	1.17	1.32
Father primary education	**1.06**	1.02	1.09	1.02	0.99	1.06	**1.09**	1.04	1.14
Father secondary education	1.01	0.97	1.04	1.00	0.97	1.04	**1.21**	1.14	1.27

Note: Number of household members was capped at 50. HH = head of household. OR = odds ratio. LL = lower limit of 95% credible interval. UL = upper limit of 95% credible interval. Bolded estimates indicate estimates whose credible interval did not include zero. The "brms" package in R does not provide p-values.

Table 4. *Random effects from multilevel logistic regression model predicting child outcomes (N = 154,800 surveys, 60 countries).*

Variable	Aggression			Distraction			Gets Along		
	Random Effect	LL	UL	Random Effect	LL	UL	Random Effect	LL	UL
Intercept	**0.64**	0.52	0.78	**0.76**	0.63	0.92	**0.77**	0.63	0.94
Took away privileges	**0.14**	0.09	0.19	**0.20**	0.15	0.25	**0.08**	0.01	0.17
Explained why behavior was wrong	**0.20**	0.14	0.27	**0.23**	0.17	0.31	**0.17**	0.11	0.26
Redirected	**0.07**	0.03	0.12	**0.16**	0.11	0.21	**0.17**	0.11	0.25
Shouted at child	**0.17**	0.12	0.22	**0.14**	0.10	0.19	**0.25**	0.18	0.34
Called child names	**0.20**	0.15	0.27	**0.16**	0.11	0.22	**0.17**	0.10	0.25
Hit child on the face/head/ears	**0.18**	0.12	0.26	**0.09**	0.05	0.15	**0.26**	0.17	0.39
Hit child with object	**0.20**	0.14	0.27	**0.23**	0.17	0.30	**0.15**	0.04	0.26
Hit/slapped child on arm/leg	**0.18**	0.12	0.24	**0.15**	0.10	0.21	0.08	0.00	0.17
Spanked child	**0.16**	0.10	0.22	**0.15**	0.10	0.20	**0.19**	0.13	0.27
Beat child as hard as one could	**0.23**	0.14	0.35	**0.21**	0.08	0.35	**0.20**	0.09	0.34
Shook child	**0.13**	0.08	0.19	**0.23**	0.17	0.29	**0.21**	0.12	0.31

Note: LL = lower limit of 95% credible interval. UL = upper limit of 95% credible interval. The analyses allowed for correlations of random slopes with one another and the intercept, which are not shown.

Table 5. *Main effects model of discipline behaviors and child age predicting child outcomes (N = 72,024 surveys, 60 countries).*

Variable	Aggression				Distraction				Gets Along			
	OR	LL	UL	*p*	OR	LL	UL	*p*	OR	LL	UL	*p*
Selected child age	**0.99**	0.99	0.99	<.001	**1.00**	0.99	1.00	.001	**1.01**	1.01	1.02	<.001
Took away privileges	**1.06**	1.03	1.10	.001	**1.11**	1.07	1.15	<.001	**0.91**	0.86	0.97	.002
Explained why behavior was wrong	**0.92**	0.88	0.96	<.001	0.97	0.93	1.01	.107	**1.32**	1.23	1.40	<.001
Redirected	0.99	0.95	1.03	.627	**1.09**	1.05	1.13	<.001	**1.09**	1.02	1.15	.007
Shouted at child	**1.20**	1.15	1.25	<.001	**1.07**	1.03	1.11	.001	1.02	0.95	1.08	.621
Called child names	**1.23**	1.17	1.28	<.001	**1.14**	1.09	1.19	<.001	**0.92**	0.86	0.98	.621
Hit child on the face/head/ears	**1.17**	1.11	1.23	<.001	1.00	0.96	1.06	.868	**0.87**	0.91	0.94	<.001
Hit child with object	**1.25**	1.19	1.31	<.001	**1.07**	1.02	1.12	.008	0.97	0.90	1.04	.369
Hit/slapped child on arm/leg	**1.11**	1.07	1.16	<.001	1.06	1.01	1.10	.008	1.02	0.95	1.09	.601
Spanked child	**1.17**	1.13	1.22	<.001	**1.05**	1.02	1.09	.005	**1.13**	1.07	1.20	<.001
Beat child as hard as one could	**1.11**	1.02	1.20	.011	1.02	0.95	1.11	.544	**0.87**	0.78	0.98	.022
Shook child	**1.17**	1.13	1.22	<.001	**1.10**	1.06	1.14	<.001	**0.85**	0.80	0.91	<.001
Selected child female	**0.74**	0.72	0.77	<.001	**0.96**	0.93	0.99	.009	**1.23**	1.17	1.30	<.001
HH is biological parent	0.98	0.93	1.03	.519	0.95	0.91	1.00	.072	**1.17**	1.07	1.28	<.001
HH is female	1.04	0.97	1.12	.296	0.98	0.92	1.05	.608	0.98	0.86	1.11	.762
Household members	**1.02**	1.01	1.03	<.001	1.00	0.99	1.01	.706	1.00	0.99	1.01	.808
Second poorest	0.99	0.94	1.04	.702	**0.94**	0.90	0.98	.007	1.03	0.96	1.11	.400
Middle	1.01	0.96	1.06	.740	**0.94**	0.90	0.99	.020	**1.11**	1.02	1.20	.014
Fourth poorest	1.00	0.94	1.05	.915	**0.94**	0.89	0.99	.017	**1.21**	1.11	1.32	<.001
Richest	0.98	0.92	1.04	.522	**0.86**	0.81	0.91	<.001	**1.42**	1.28	1.58	<.001
Urban community	0.99	0.95	1.03	.562	1.03	0.99	1.07	.121	**0.89**	0.83	0.95	<.001
MICS round 5	**0.79**	0.75	0.84	<.001	**1.10**	1.03	1.16	.002	**0.72**	0.65	0.80	<.001
Child needs physical punishment	1.01	0.98	1.05	.470	1.04	1.00	1.08	.050	1.06	1.00	1.13	.054
Mother primary education	1.00	0.95	1.05	.948	**1.08**	1.03	1.13	.003	**1.11**	1.03	1.19	.007
Mother secondary education	**0.93**	0.87	0.98	.011	1.06	1.00	1.12	.058	**1.25**	1.14	1.38	<.001
Father primary education	**1.06**	1.01	1.12	.023	1.05	1.00	1.11	.050	**1.13**	1.04	1.21	.002
Father secondary education	1.01	0.95	1.07	.778	1.03	0.98	1.09	.230	**1.27**	1.16	1.38	<.001

Note: OR = odds ratio. LL = lower limit of 95% confidence interval. UL = upper limit of 95% confidence interval.

Table 6. *Interaction effects for child age and parental discipline behaviors predicting child outcomes (N = 72,024 surveys, 60 countries).*

Interaction	Aggression				Distraction				Gets Along			
	OR	LL	UL	*p*	OR	LL	UL	*p*	OR	LL	UL	*p*
Child age*Shout	1.001	0.996	1.001	.794	1.000	0.995	1.004	.901	0.997	0.989	1.005	.416
Child age*Called names	1.004	0.998	1.009	.168	0.998	0.993	1.004	.548	**0.991**	0.982	0.999	.025
Child age*Shook	**1.007**	1.003	1.012	.003	1.004	0.999	1.009	.070	0.993	0.986	1.001	.108
Child age*Spank	1.004	0.999	1.009	.067	1.001	0.996	1.005	.786	0.998	0.991	1.006	.607
Child age*Hit on hand/arm/leg	1.002	0.997	1.007	.402	1.005	1.000	1.010	.052	**0.987**	0.979	0.995	.002
Child age*Hit with object	**1.009**	1.003	1.015	.004	1.004	0.998	1.010	.180	0.994	0.984	1.003	.201
Child age*Hit on face/head/ears	1.002	0.996	1.008	.507	1.004	0.998	1.010	.182	0.996	0.987	1.005	.372
Child age*Beat hard	1.006	0.996	1.017	.235	1.002	0.991	1.012	.739	0.995	0.980	1.010	.522
Child age*Took away privileges	**1.006**	1.001	1.011	.012	1.003	0.999	1.008	.142	0.999	0.992	1.007	.830
Child age*Verbal reasoning	0.999	0.994	1.005	.809	1.001	0.995	1.006	.744	0.995	0.987	1.004	.247
Child age*Redirected	0.999	0.995	1.004	.810	0.999	0.995	1.004	.682	0.996	0.988	1.004	.299

Note: OR = odds ratio. LL = lower limit of 95% confidence interval. UL = upper limit of 95% confidence interval. All main effects shown in Table 5 were included in the model but are not shown.

Table 7. *Country-level Inequality-Adjusted Human Development Index in Ascending Order.*

Country	IHDI
Central African Republic	21.20
Chad	22.40
Sierra Leone	24.20
Mali	27.00
Guinea Bissau	27.30
Democratic Republic of the Congo	27.80
The Gambia	28.00
Nigeria	28.10
Guinea	29.80
Malawi	30.60
Togo	31.20
Côte d'Ivoire	31.30
Mauritania	32.70
Senegal, Dakar	32.70
Eswatini	32.80
Benin	34.10
Madagascar, South	35.40
Cameroon	35.90
Nepal	36.60
Pakistan	36.60
Kenya	37.60
Republic of the Congo	37.80
Zimbabwe	39.10
Sao Tome and Principe	40.10
Laos	41.50
Bangladesh	41.70
Ghana	42.20
El Salvador	49.10
Belize	49.50
Tunisia	53.50
Suriname	53.70
Guyana	54.40
Paraguay	54.60
Dominican Republic	54.90
Vietnam	55.30
Kyrgyzstan	56.20
Turkmenistan	56.90

Bosnia and Herzegovina	57.40
Thailand	58.90
Iraq	59.00
Mexico	59.00
Mongolia	59.00
Algeria	59.10
Panama	59.20
Lebanon, Palestinian Refugees	59.30
Costa Rica	60.70
Jamaica	61.00
State of Palestine	61.40
St. Lucia	61.80
Macedonia	61.90
Moldova	63.10
Uruguay	66.00
Kazakhstan	66.10
Trinidad and Tobago	66.20
Argentina	66.60
Barbados	67.70
Serbia	68.40
Ukraine	69.00
Belarus	73.40
Montenegro	74.70

Table 8. *Main effects model of discipline behaviors and IHDI predicting child outcomes (N = 151,792 surveys, 58 countries).*

Variable	Aggression				Distraction				Gets Along			
	OR	LL	UL	*p*	OR	LL	UL	*p*	OR	LL	UL	*p*
IHDI	**0.97**	0.97	0.98	<.001	0.99	0.98	1.01	.350	**1.02**	1.00	1.03	.005
Took away privileges	**1.04**	1.01	1.07	.002	**1.07**	1.04	1.09	<.001	**0.92**	0.89	0.96	<.001
Explained why behavior was wrong	**0.93**	0.90	0.96	<.001	0.99	0.96	1.02	.541	**1.30**	1.25	1.36	<.001
Redirected	0.99	0.97	1.01	.428	**1.06**	1.03	1.08	<.001	**1.07**	1.03	1.12	<.001
Shouted at child	**1.17**	1.14	1.20	<.001	**1.04**	1.02	1.07	.001	**1.05**	1.00	1.09	.048
Called child names	**1.24**	1.20	1.27	<.001	**1.13**	1.11	1.16	<.001	**0.93**	0.89	0.97	.001
Hit child on the face/head/ears	**1.14**	1.10	1.18	<.001	1.01	0.98	1.05	.479	**0.90**	0.86	0.94	<.001
Hit child with object	**1.21**	1.17	1.24	<.001	**1.05**	1.02	1.08	.003	0.97	0.93	1.02	.288
Hit/slapped child on arm/leg	**1.09**	1.06	1.13	<.001	**1.05**	1.02	1.08	.001	1.03	0.99	1.08	.152
Spanked child	**1.13**	1.10	1.16	<.001	**1.04**	1.02	1.07	.001	**1.09**	1.05	1.14	<.001
Beat child as hard as one could	**1.11**	1.06	1.17	<.001	**1.05**	1.00	1.10	.045	**0.87**	0.82	0.94	<.001
Shook child	**1.14**	1.11	1.17	<.001	**1.07**	1.05	1.10	<.001	**0.86**	0.83	0.90	<.001
Selected child age	**1.00**	0.99	1.00	.005	**0.99**	0.99	1.00	<.001	**1.01**	1.01	1.02	<.001
Selected child female	**0.90**	0.88	0.92	<.001	0.99	0.97	1.01	.357	**1.09**	1.05	1.13	<.001
HH is biological parent	**0.96**	0.92	0.99	.025	0.99	0.95	1.02	.501	**1.08**	1.01	1.14	.019
HH is female	1.03	0.97	1.08	.360	1.01	0.97	1.07	.573	0.97	0.89	1.07	.627
Household members	**1.01**	1.01	1.02	<.001	1.00	1.00	1.01	.150	**0.99**	0.98	1.00	.001
Second poorest	1.00	0.96	1.03	.799	**0.95**	0.92	0.98	.001	**1.05**	1.00	1.10	.038
Middle	1.00	0.96	1.03	.776	0.99	0.95	1.02	.394	**1.16**	1.10	1.22	<.001
Fourth poorest	0.99	0.96	1.03	.695	**0.96**	0.92	0.99	.019	**1.20**	1.13	1.28	<.001
Richest	**0.95**	0.91	1.00	.030	**0.91**	0.87	0.95	<.001	**1.44**	1.34	1.55	<.001
Urban community	1.00	0.97	1.03	.893	1.02	0.99	1.05	.196	**0.91**	0.87	0.95	.008
MICS round 5	**0.80**	0.77	0.83	<.001	**1.04**	1.00	1.09	.031	**0.71**	0.66	0.76	<.001
Child needs physical punishment	1.02	1.00	1.05	.103	**1.05**	1.03	1.08	<.001	**1.06**	1.01	1.10	.008
Mother primary education	1.02	0.98	1.05	.359	**1.08**	1.05	1.12	<.001	**1.10**	1.05	1.16	<.001
Mother secondary education	**0.95**	0.92	0.99	.018	1.01	0.97	1.05	.552	**1.27**	1.19	1.35	<.001
Father primary education	**1.05**	1.02	1.09	.002	1.01	0.98	1.05	.404	**1.07**	1.02	1.12	.008
Father secondary education	1.00	0.97	1.04	.919	0.99	0.96	1.03	.748	**1.19**	1.12	1.26	<.001

Note: IHDI = Inequality-Adjusted Human Development Index. OR = odds ratio. LL = lower limit of 95% confidence interval. UL = upper limit of 95% confidence interval.

Table 9. *Interaction effects for Inequality-Adjusted Human Development Index (IHDI) and parental discipline behaviors predicting child outcomes (N = 151,792 surveys, 58 countries).*

Interaction	Aggression				Distraction				Gets Along			
	OR	LL	UL	*p*	OR	LL	UL	*p*	OR	LL	UL	*p*
IHDI*Shout	**1.008**	1.006	1.010	<.001	**1.001**	1.000	1.003	.044	**0.983**	0.980	0.986	<.001
IHDI*Called names	**1.003**	1.001	1.005	.001	1.000	0.999	1.002	.712	**0.990**	0.987	0.993	<.001
IHDI*Shook	**1.003**	1.001	1.005	<.001	1.000	0.998	1.002	.870	**0.991**	0.88	0.994	<.001
IHDI*Spank	**1.004**	1.002	1.005	<.001	**1.002**	1.001	1.004	.005	**0.988**	0.986	0.991	<.001
IHDI*Hit on hand/arm/leg	**1.003**	1.001	1.005	.002	1.002	0.999	1.003	.089	**0.993**	0.990	0.996	<.001
IHDI*Hit with object	1.002	0.999	1.004	.066	1.001	0.998	1.003	.544	**0.995**	0.991	0.998	.001
IHDI*Hit on face/head/ears	**1.003**	1.001	1.006	.003	**1.004**	1.002	1.007	<.001	**0.995**	0.992	0.998	.003
IHDI*Beat hard	**1.005**	1.001	1.009	.006	0.997	0.993	1.000	.073	**0.992**	0.987	0.996	.001
IHDI*Took away privileges	1.001	0.999	1.002	.547	0.999	0.998	1.001	.516	0.998	0.996	1.001	.213
IHDI*Verbal reasoning	1.002	0.999	1.004	.076	**1.003**	1.001	1.005	.008	**0.990**	0.986	0.993	<.001
IHDI*Redirected	**1.002**	1.000	1.004	.028	1.001	1.000	1.003	.132	**0.994**	0.991	0.996	<.001

Note: OR = odds ratio. LL = lower limit of 95% confidence interval. UL = upper limit of 95% confidence interval. All main effects shown in Table 7 were included in the model but are not shown.

Table 10. *Country-level Gender Inequality Index in Ascending Order*.

Country	GII
Belarus	14.90
Macedonia	16.20
Montenegro	17.50
Serbia	19.90
Bosnia and Herzegovina	22.80
Moldova	24.50
Tunisia	28.60
Vietnam	30.80
Cuba	31.60
Barbados	32.30
Uruguay	32.60
Ukraine	32.70
Costa Rica	33.10
Argentina	35.80
Kazakhstan	35.80
Mexico	35.90
Trinidad and Tobago	36.00
Kyrgyzstan	37.50
El Salvador	40.50
Mongolia	41.40
St. Lucia	41.70
Thailand	42.30
Lebanon, Palestinian Refugees	42.40
Jamaica	44.30
Paraguay	45.50
Belize	45.90
Dominican Republic	47.80
Guyana	48.30
Suriname	49.70
Panama	49.80
Algeria	50.00
Laos	50.90
Sao Tome and Principe	53.20
Senegal, Dakar	54.50
Zimbabwe	55.10
Pakistan	55.40
Ghana	57.40

Iraq	57.50
Cameroon	57.70
Kenya	58.20
Bangladesh	59.10
Malawi	59.10
Eswatini	59.20
Republic of the Congo	60.20
Benin	62.40
Togo	64.00
Nepal	64.70
Democratic Republic of the Congo	65.40
The Gambia	65.40
Mauritania	66.30
Côte d'Ivoire	66.40
Sierra Leone	67.00
Mali	68.00
Central African Republic	69.30
Chad	71.40

Table 11. *Main effects model of discipline behaviors and GII predicting child outcomes (N = 124,847 surveys, 52 countries).*

Variable	Aggression				Distraction				Gets Along			
	OR	LL	UL	*p*	OR	LL	UL	*p*	OR	LL	UL	*p*
Gender Inequality Index	**1.02**	1.01	1.03	<.001	**1.02**	1.00	1.03	.014	**0.98**	0.97	0.99	.001
Took away privileges	1.02	0.99	1.04	.239	**1.06**	1.03	1.09	<.001	**0.93**	0.89	0.98	.002
Explained why behavior was wrong	**0.93**	0.90	0.96	<.001	0.99	0.96	1.02	.648	**1.22**	1.16	1.28	<.001
Redirected	0.99	0.97	1.03	.952	**1.08**	1.04	1.10	<.001	**1.07**	1.02	1.11	.004
Shouted at child	**1.19**	1.15	1.22	<.001	**1.05**	1.02	1.09	<.001	0.98	0.93	1.03	.348
Called child names	**1.24**	1.21	1.28	<.001	**1.11**	1.08	1.14	<.001	**0.91**	0.87	0.96	<.001
Hit child on the face/head/ears	**1.16**	1.12	1.20	<.001	1.01	0.97	1.05	.601	0.96	0.90	1.01	.111
Hit child with object	**1.22**	1.17	1.26	<.001	**1.05**	1.01	1.09	.007	0.99	0.93	1.04	.623
Hit/slapped child on arm/leg	**1.07**	1.03	1.10	<.001	1.03	1.00	1.06	.089	1.04	0.99	1.10	.140
Spanked child	**1.13**	1.10	1.16	<.001	**1.05**	1.02	1.08	.001	**1.09**	1.04	1.14	<.001
Beat child as hard as one could	**1.10**	1.04	1.18	.002	0.99	0.93	1.05	.667	**0.85**	0.78	0.93	<.001
Shook child	**1.12**	1.09	1.15	<.001	**1.03**	1.00	1.06	.027	**0.86**	0.82	0.91	<.001
Selected child age	**1.00**	0.99	1.00	.027	**0.99**	0.99	1.00	<.001	**1.01**	1.01	1.02	<.001
Selected child female	**0.88**	0.86	0.90	<.001	0.98	0.96	1.00	.063	**1.09**	1.05	1.13	<.001
HH is biological parent	0.96	0.93	1.00	.067	0.99	0.95	1.03	.602	1.07	1.00	1.14	.057
HH is female	1.05	0.99	1.11	.100	1.00	0.95	1.06	.919	0.95	0.86	1.05	.320
Household members	**1.01**	1.01	1.02	<.001	**1.01**	1.00	1.10	.011	0.99	0.99	1.00	.059
Second poorest	1.00	0.96	1.03	.839	**0.94**	0.91	0.97	.001	**1.06**	1.01	1.12	.026
Middle	0.98	0.93	1.02	.236	0.98	0.95	1.02	.387	**1.15**	1.08	1.22	<.001
Fourth poorest	0.99	0.95	1.04	.796	**0.96**	0.92	1.00	.041	**1.21**	1.13	1.30	<.001
Richest	0.96	0.92	1.01	.124	**0.94**	0.89	0.98	.007	**1.42**	1.31	1.54	<.001
Urban community	1.02	0.99	1.05	.154	1.01	0.98	1.04	.467	**0.88**	0.83	0.92	<.001
MICS round 5	**0.85**	0.80	0.91	<.001	**1.51**	1.42	1.60	<.001	**0.64**	0.57	0.72	<.001
Child needs physical punishment	1.03	1.00	1.05	.055	**1.03**	1.00	1.06	.023	0.99	0.94	1.03	.535
Mother primary education	1.02	0.98	1.06	.306	**1.05**	1.02	1.09	.003	**1.06**	1.00	1.12	.037
Mother secondary education	**0.94**	0.90	0.98	.006	1.00	0.96	1.05	.991	**1.20**	1.12	1.29	<.001
Father primary education	**1.06**	1.02	1.10	.003	1.02	0.99	1.06	.242	**1.06**	1.01	1.12	.019
Father secondary education	1.01	0.97	1.05	.741	0.99	0.95	1.04	.793	**1.18**	1.10	1.25	<.001

Note: GII = Gender Inequality Index; OR = odds ratio. LL = lower limit of 95% confidence interval. UL = upper limit of 95% confidence interval.

Table 12. *Interaction effects for Gender Inequality Index (GII) and parental discipline behaviors predicting child outcomes (N = 124,847 surveys, 52 countries).*

Interaction	Aggression				Distraction				Gets Along			
	OR	LL	UL	*p*	OR	LL	UL	*p*	OR	LL	UL	*p*
GII*Shout	**0.990**	0.987	0.992	<.001	**0.997**	0.995	0.999	.016	**1.018**	1.014	1.023	<.001
GII *Called names	**0.990**	0.987	0l992	<.001	0.997	0.995	1.000	.055	**1.018**	1.014	1.022	<.001
GII *Shook	**0.993**	0.991	0.996	<.001	**0.992**	0.990	0.995	<.001	**1.014**	1.010	1.019	<.001
GII *Spank	**0.992**	0.990	0.995	<.001	**0.993**	0.991	0.995	<.001	**1.015**	1.011	1.019	<.001
GII *Hit on hand/arm/leg	**0.992**	0.989	0.995	<.001	**0.994**	0.992	0.997	<.001	**1.009**	1.004	1.014	<.001
GII *Hit with object	**0.995**	0.992	0.998	<.001	0.998	0.995	1.002	.344	**1.011**	1.005	1.016	<.001
GII *Hit on face/head/ears	**0.993**	0.989	0.997	.003	**0.996**	0.992	0.999	.036	**1.007**	1.002	1.013	.013
GII *Beat hard	**0.987**	0.981	0.993	<.001	1.001	0.994	1.007	.864	**1.011**	1.003	1.020	.008
GII *Took away privileges	**0.997**	0.995	0.999	<.001	0.999	0.996	1.001	.166	1.002	0.998	1.006	.280
GII *Verbal reasoning	1.001	0.998	1.004	.650	0.998	0.995	1.001	.163	**1.008**	1.003	1.014	.002
GII *Redirected	**0.998**	0.995	1.000	.044	**0.998**	0.995	0.999	.027	1.004	1.000	1.008	.077

Note: OR = odds ratio. LL = lower limit of 95% confidence interval. UL = upper limit of 95% confidence interval. All main effects shown in Table 9 were included in the model but are not shown.

FIGURES
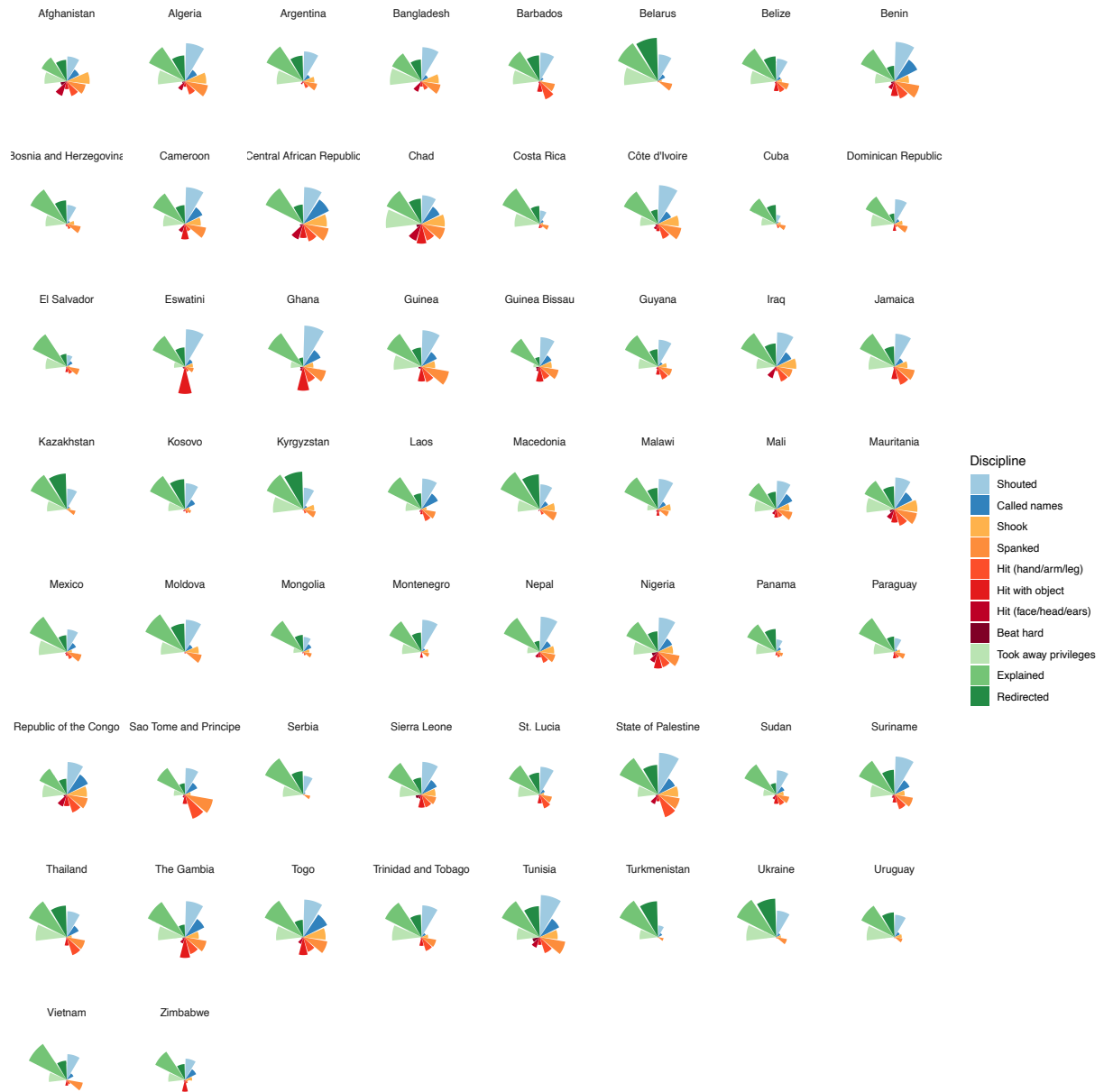
Figure 1. Visual representation of prevalence estimates of 11 discipline behaviors across 58 countries. For raw percentages, see Table 1.
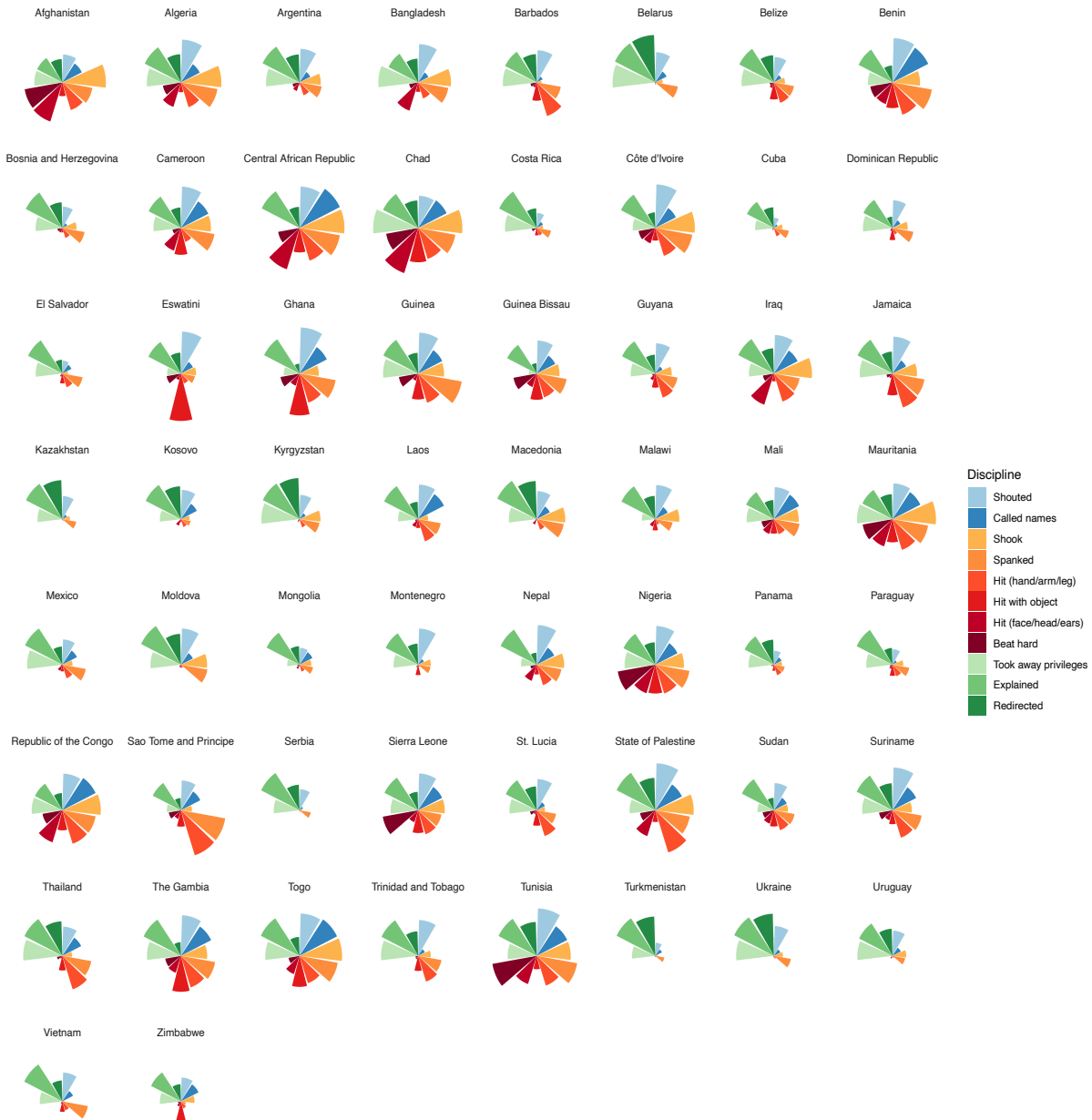
Figure 2. Visual representation of the relative prevalence of 11 discipline behaviors across 58 countries. *Note*: The size of bars conveys the relative prevalence of discipline behavior compared to the other countries in the sample. Future research will need to explore the reasons why certain countries have higher endorsement rates of discipline items than others. Differences in endorsement rates could be due to factors such as social desirability differences, differences in item interpretation, language differences, or other factors that should be explored. Rather than serving as a diagnostic or finite tool, this graph should serve as a precedent from which researchers can investigate relative differences in parental endorsement of discipline items across low- and middle-income countries.
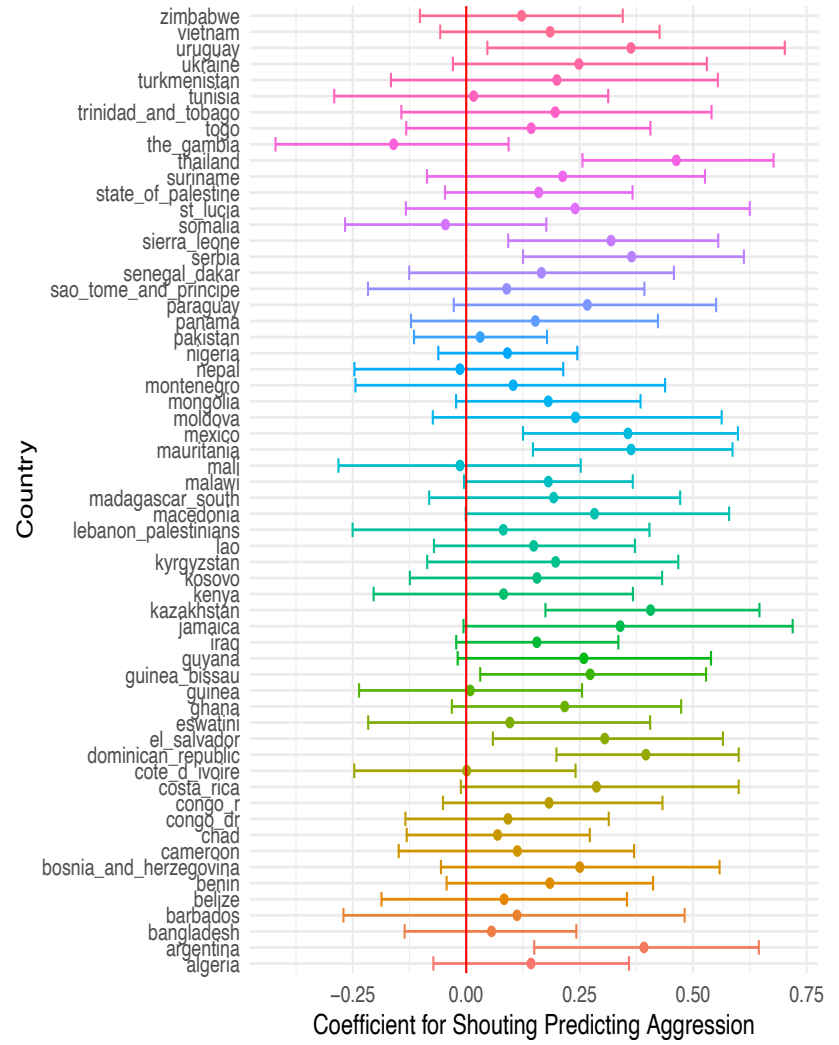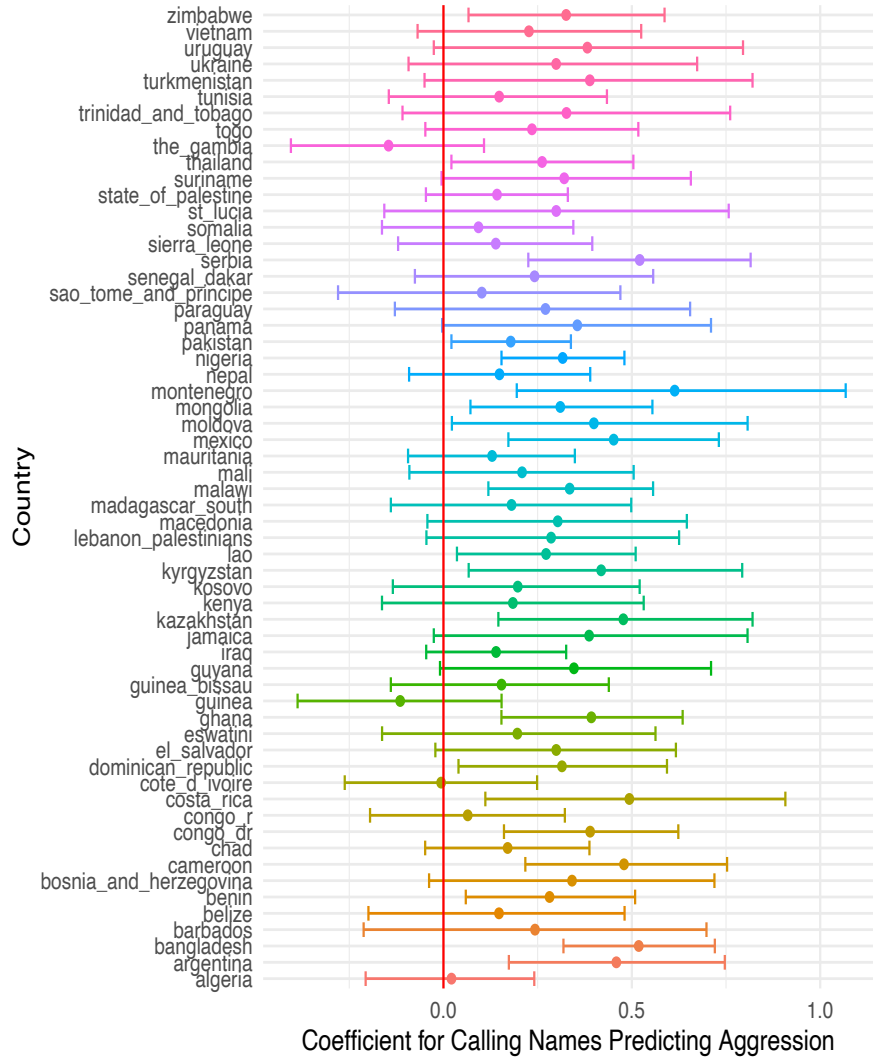
Figure 3. Random effects for shouting and calling names predicting the log odds of child aggression.
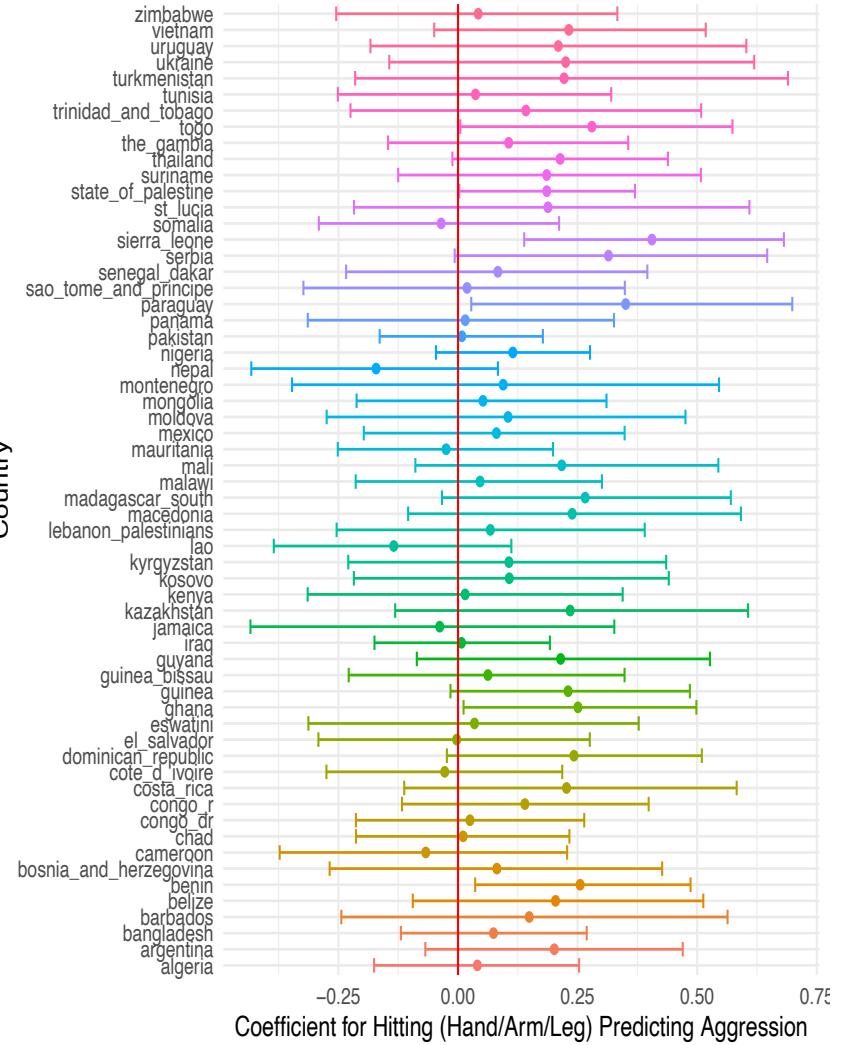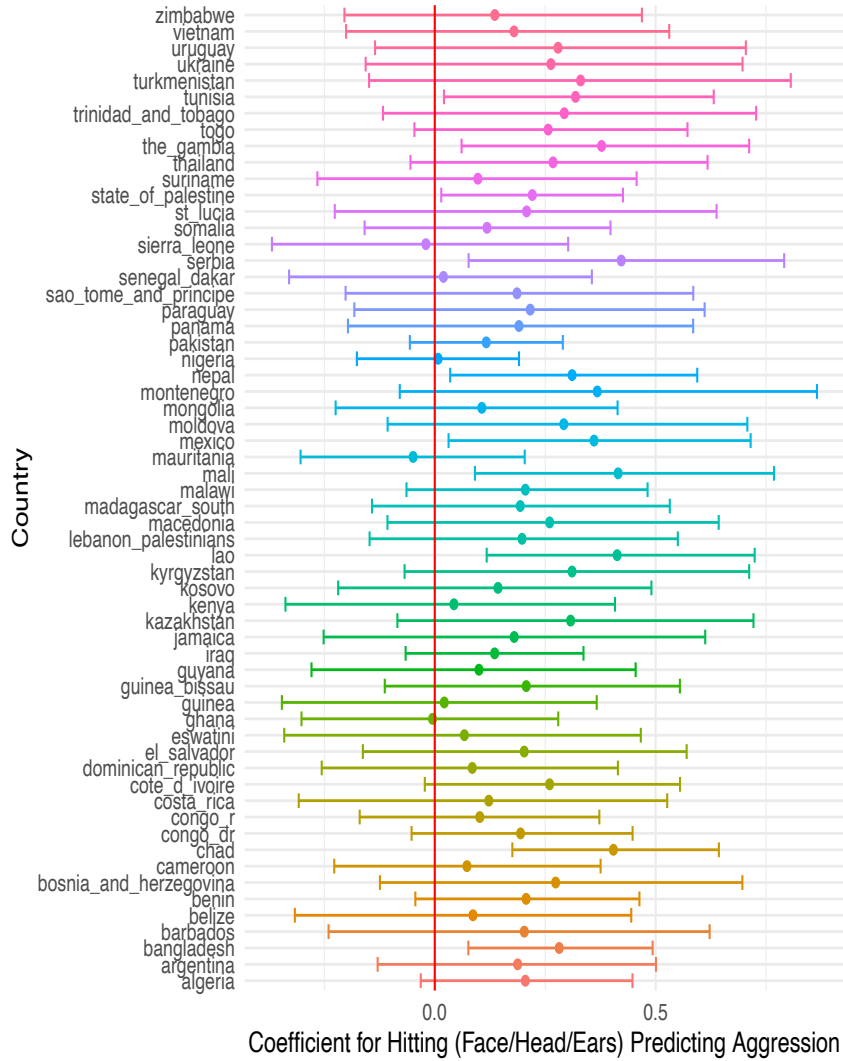
Figure 4. Random effects for hitting predicting the log odds of child aggression.
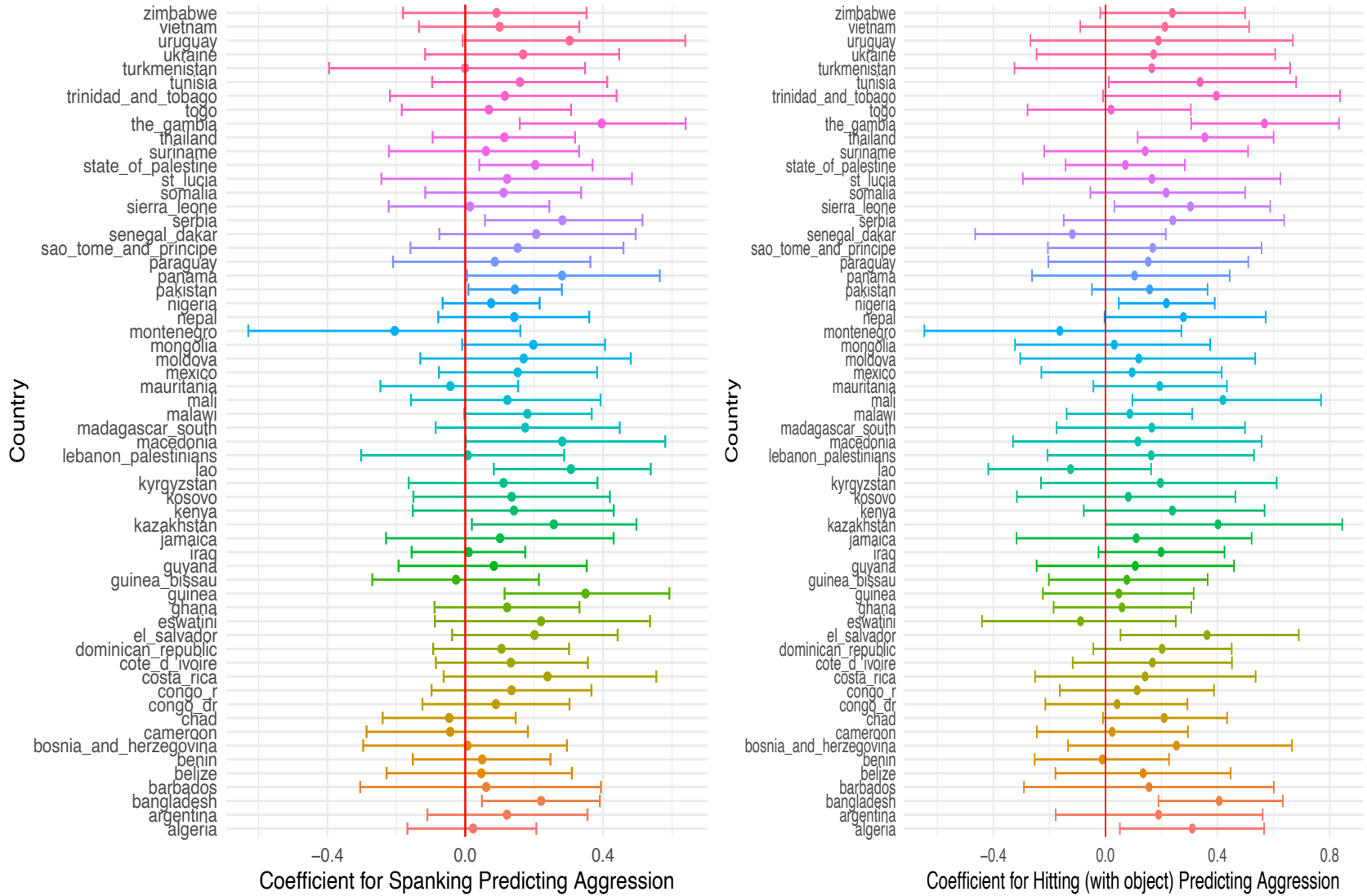
Figure 5. Random effects for hitting with an object and spanking predicting the log odds of child aggression.
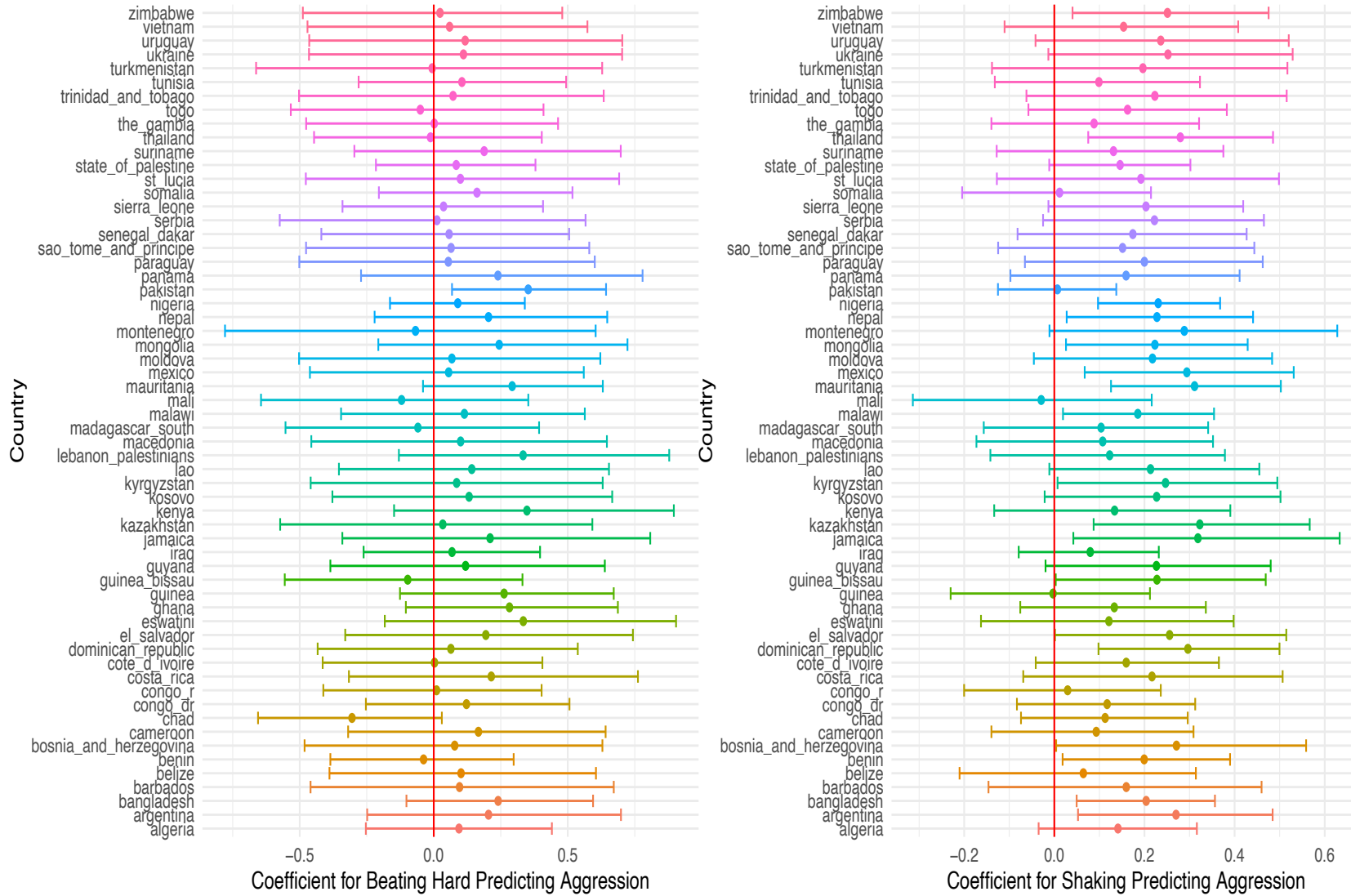
Figure 6. Random effects for shaking and beating as hard as one could predicting the log odds of child aggression.
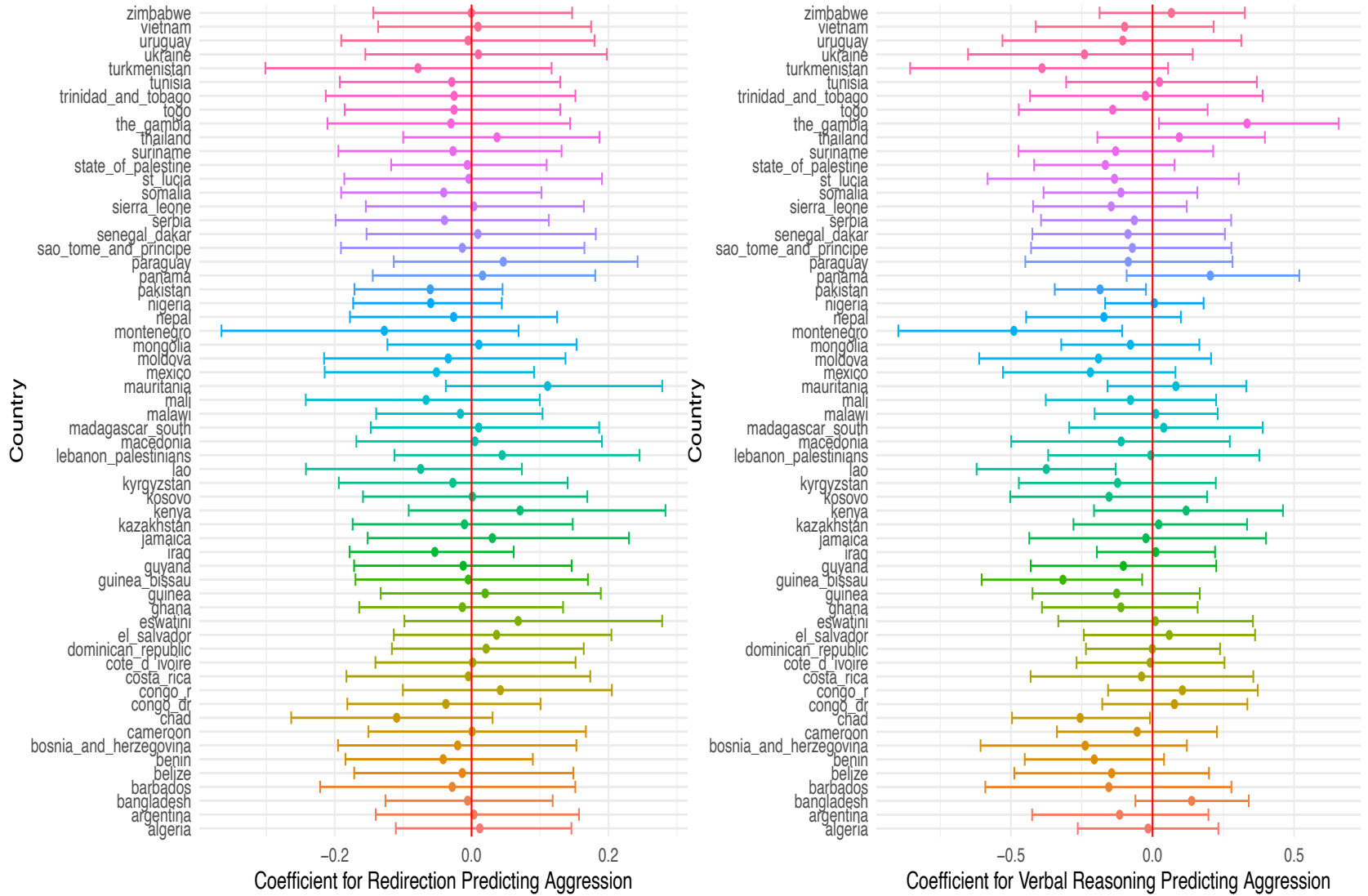
Figure 7. Random effects for redirection and verbal reasoning predicting the log odds of child aggression.
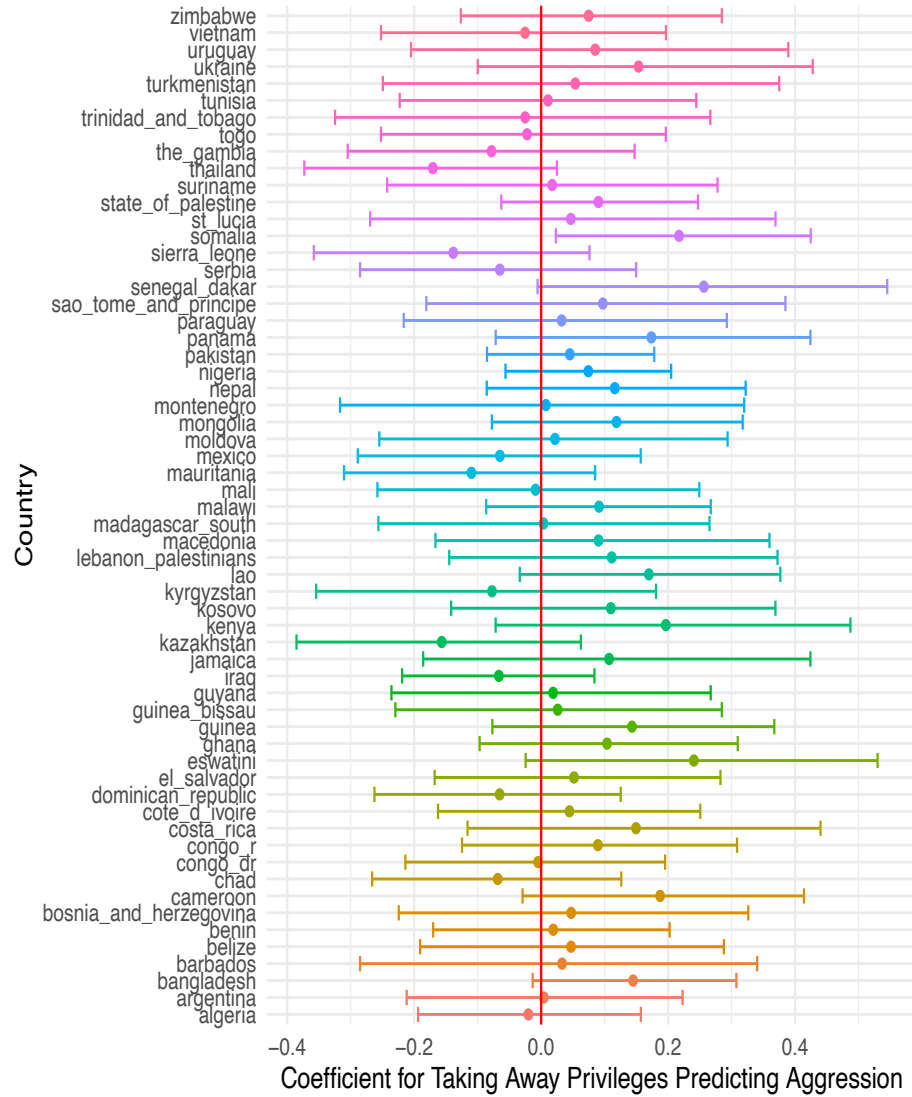
Figure 8. Random effects for taking away privileges prediciting the log odds of child aggression.
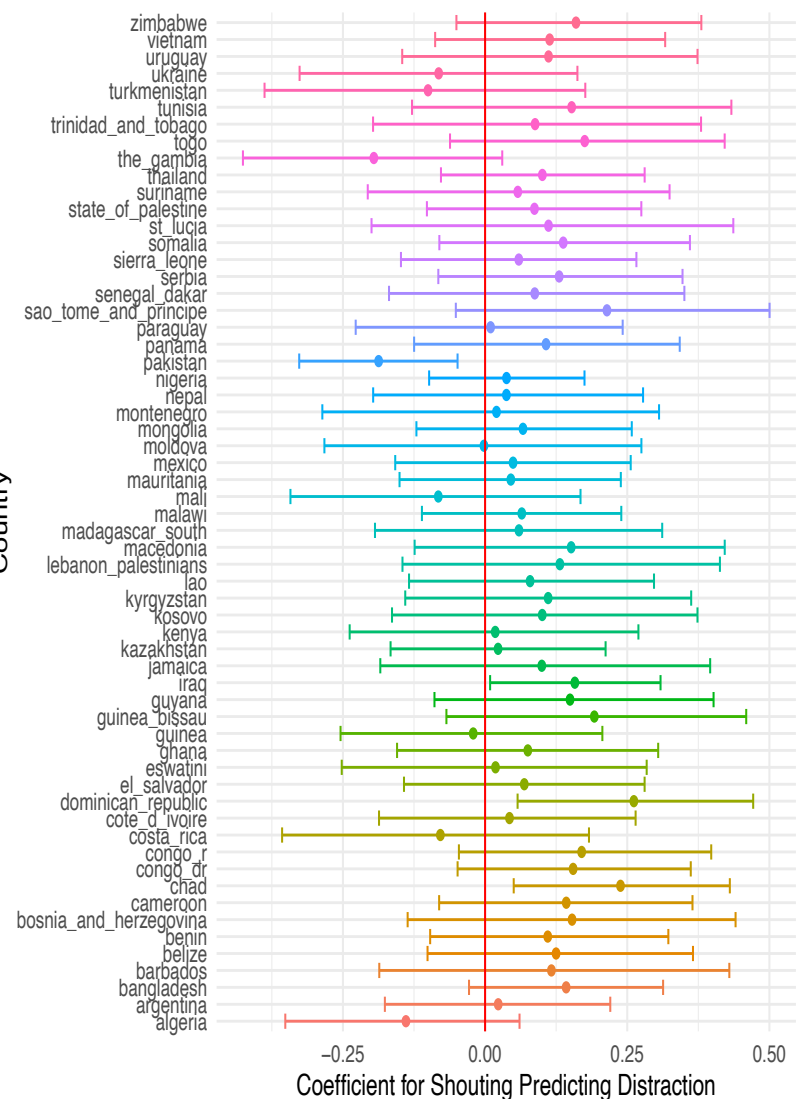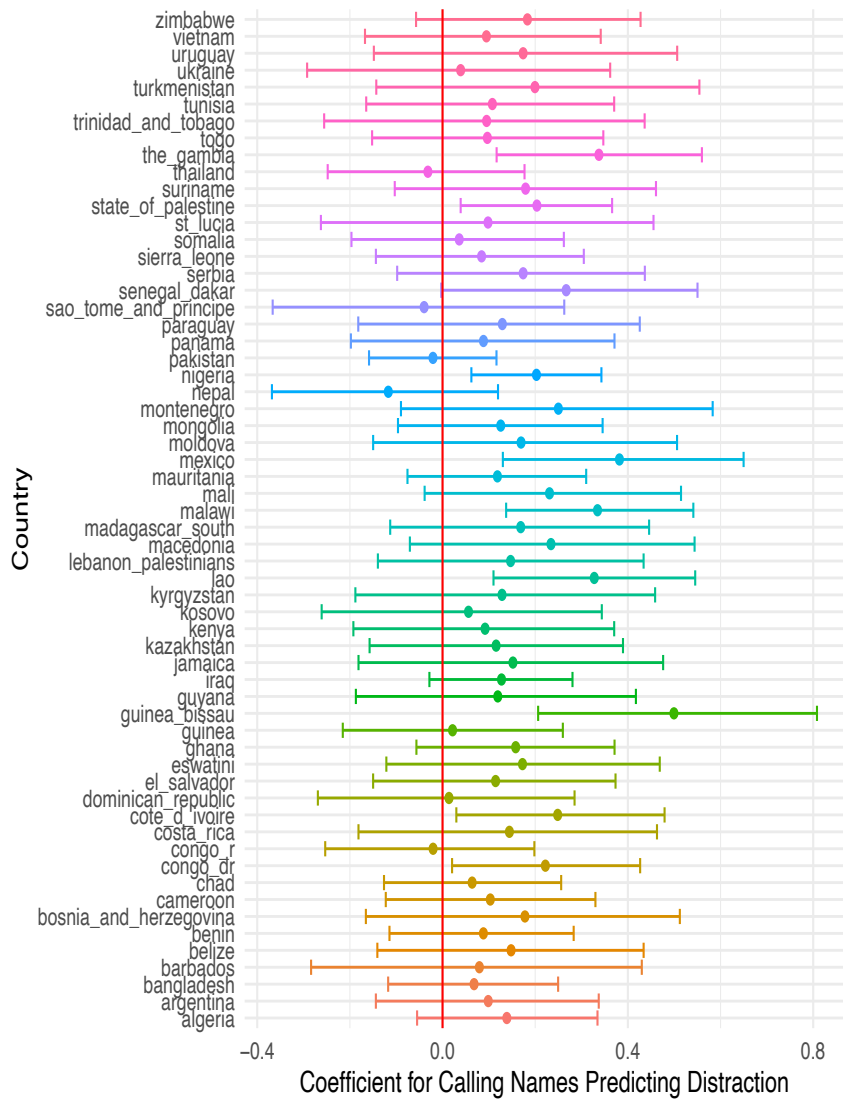
Figure 9. Random effects for shouting and calling names predicting the log odds of child distraction.
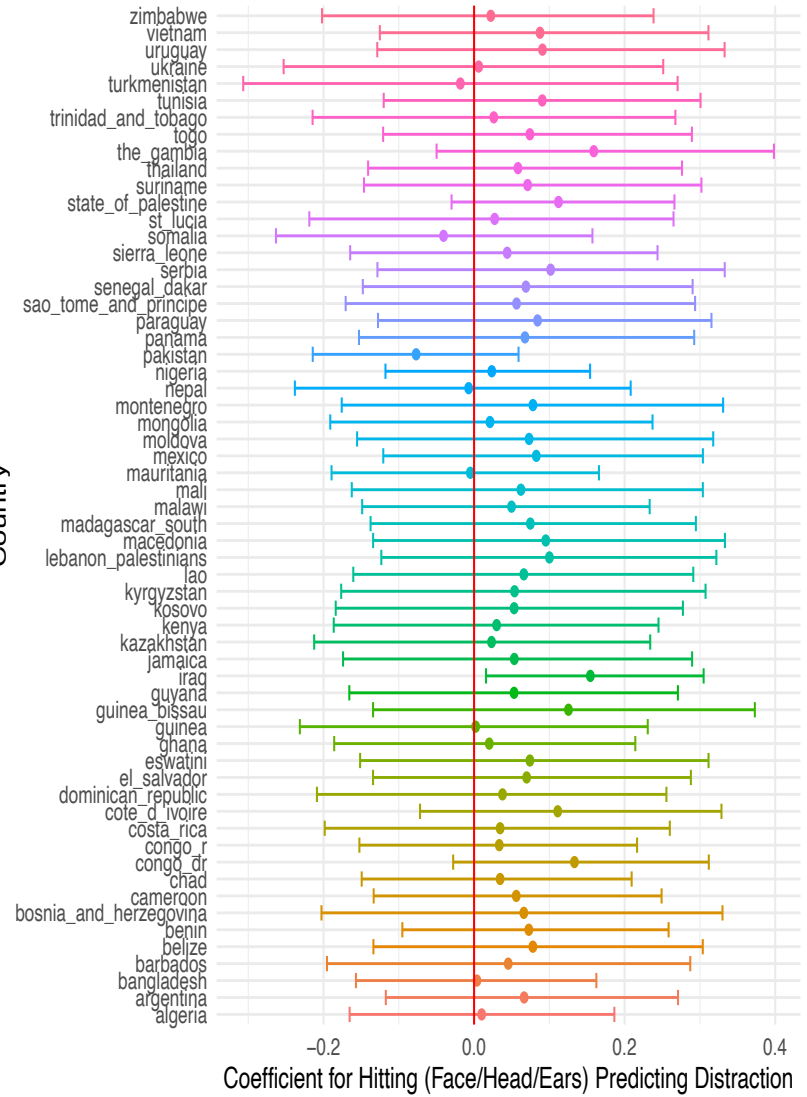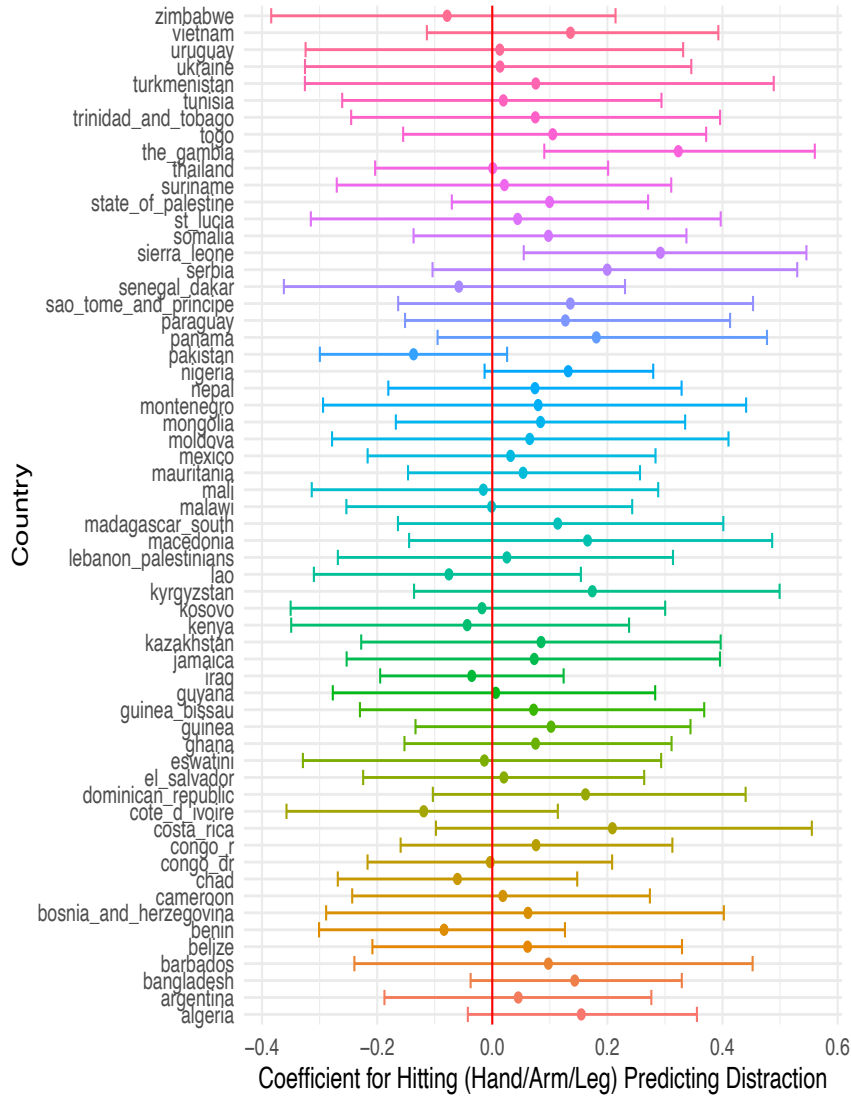
Figure 10. Random effects for hitting predicting the log odds of child distraction.
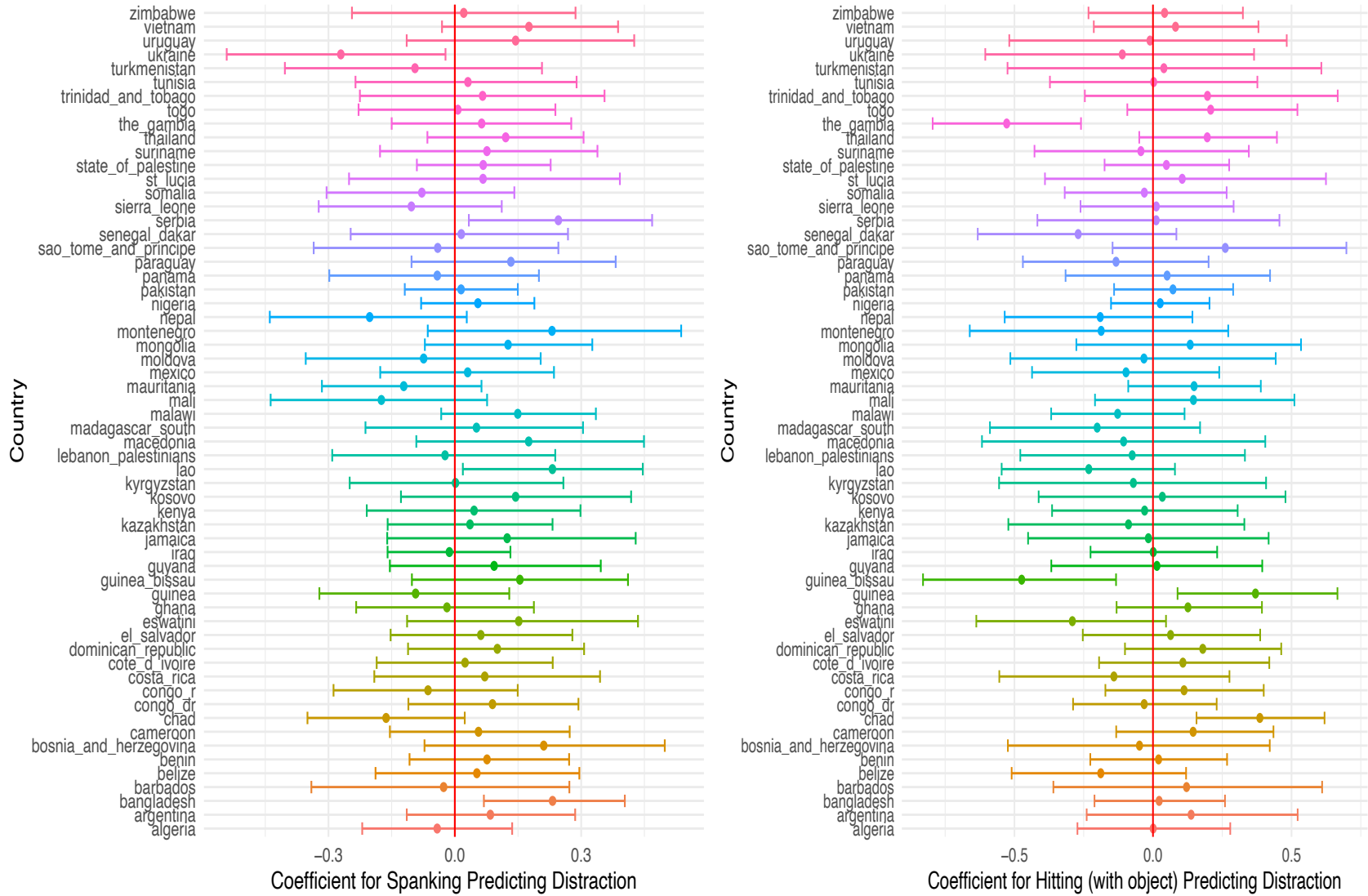
Figure 11. Random effects for hitting with an ojbect and spanking predicting the log odds of child distraction.

Figure 12. Random effects for shaking and beating as hard as one could predicting the log odds of child distraction.
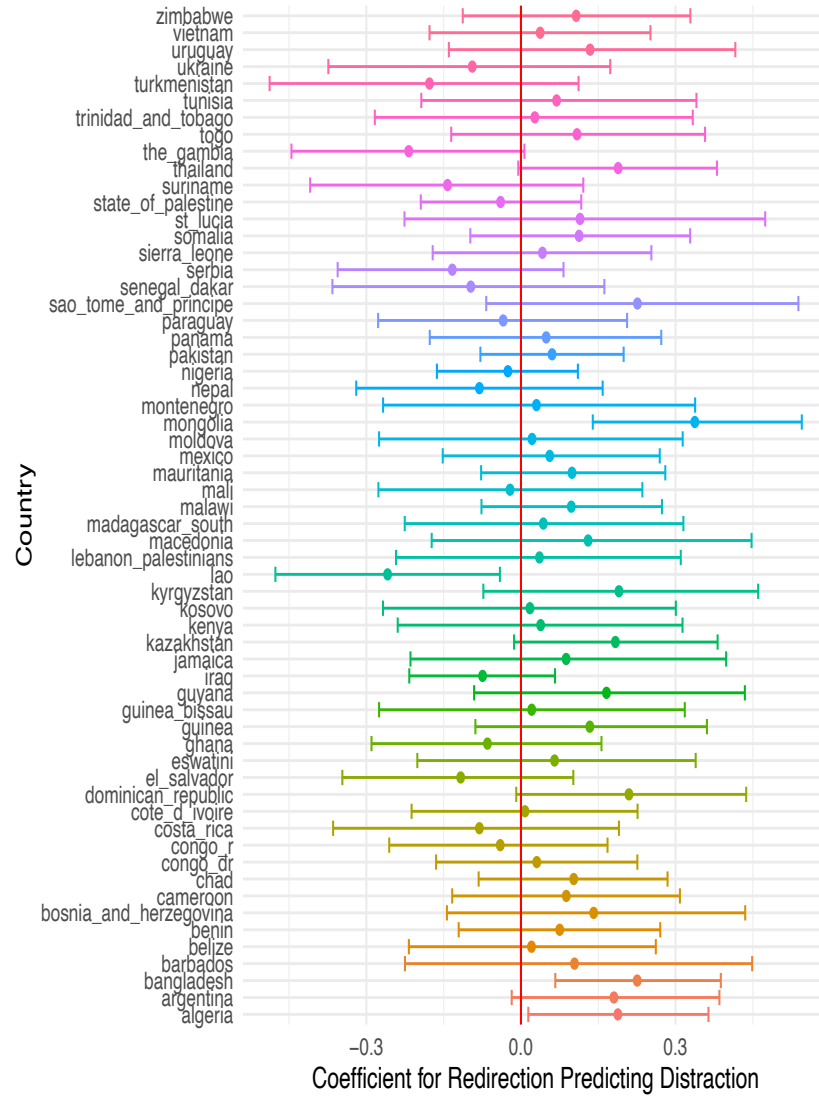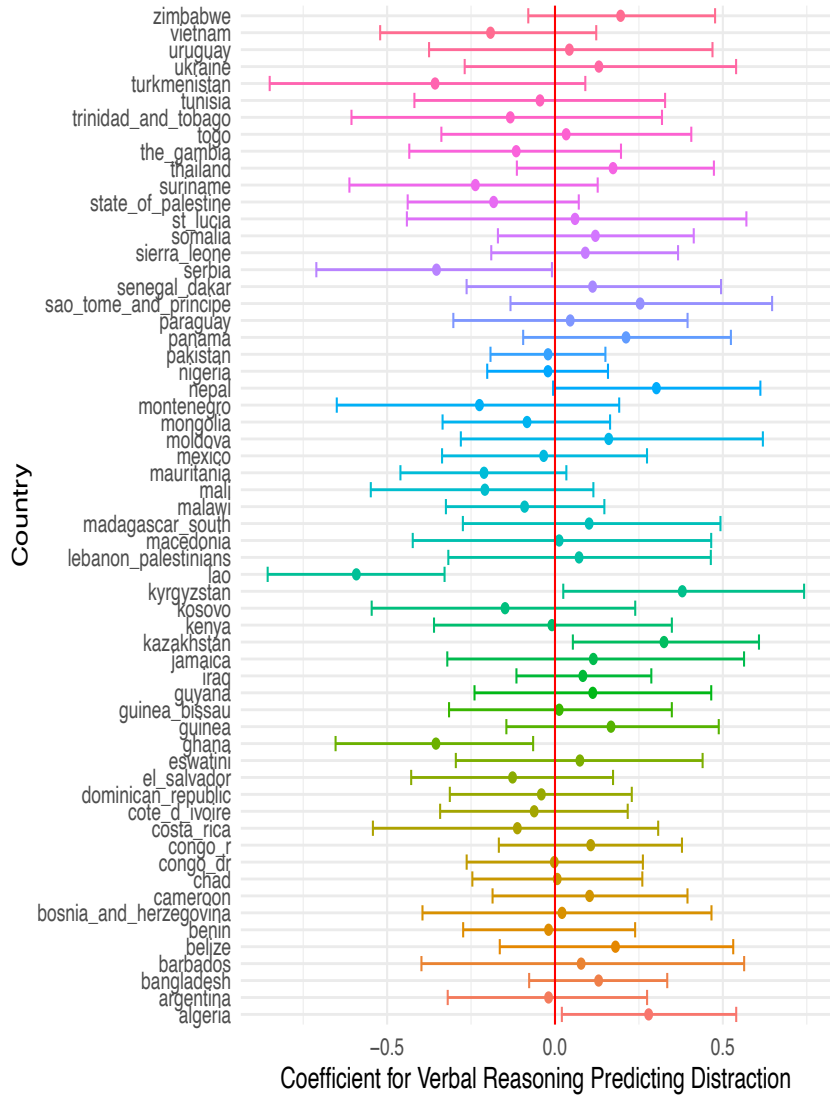
Figure 13. Random effects for redirection and verbal reasoning predicting the log odds of child distraction.
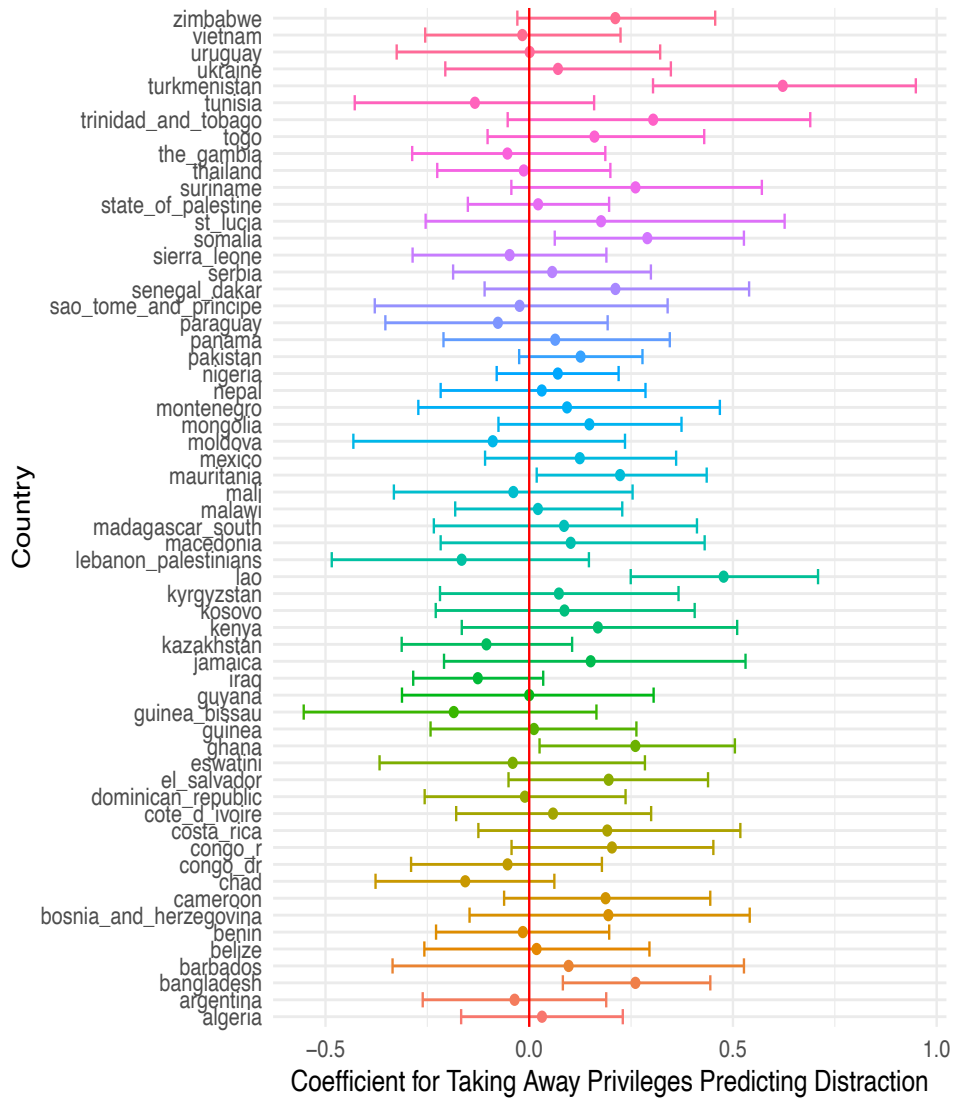
Figure 14. Random effects for taking away privileges predicting the log odds of child distraction.
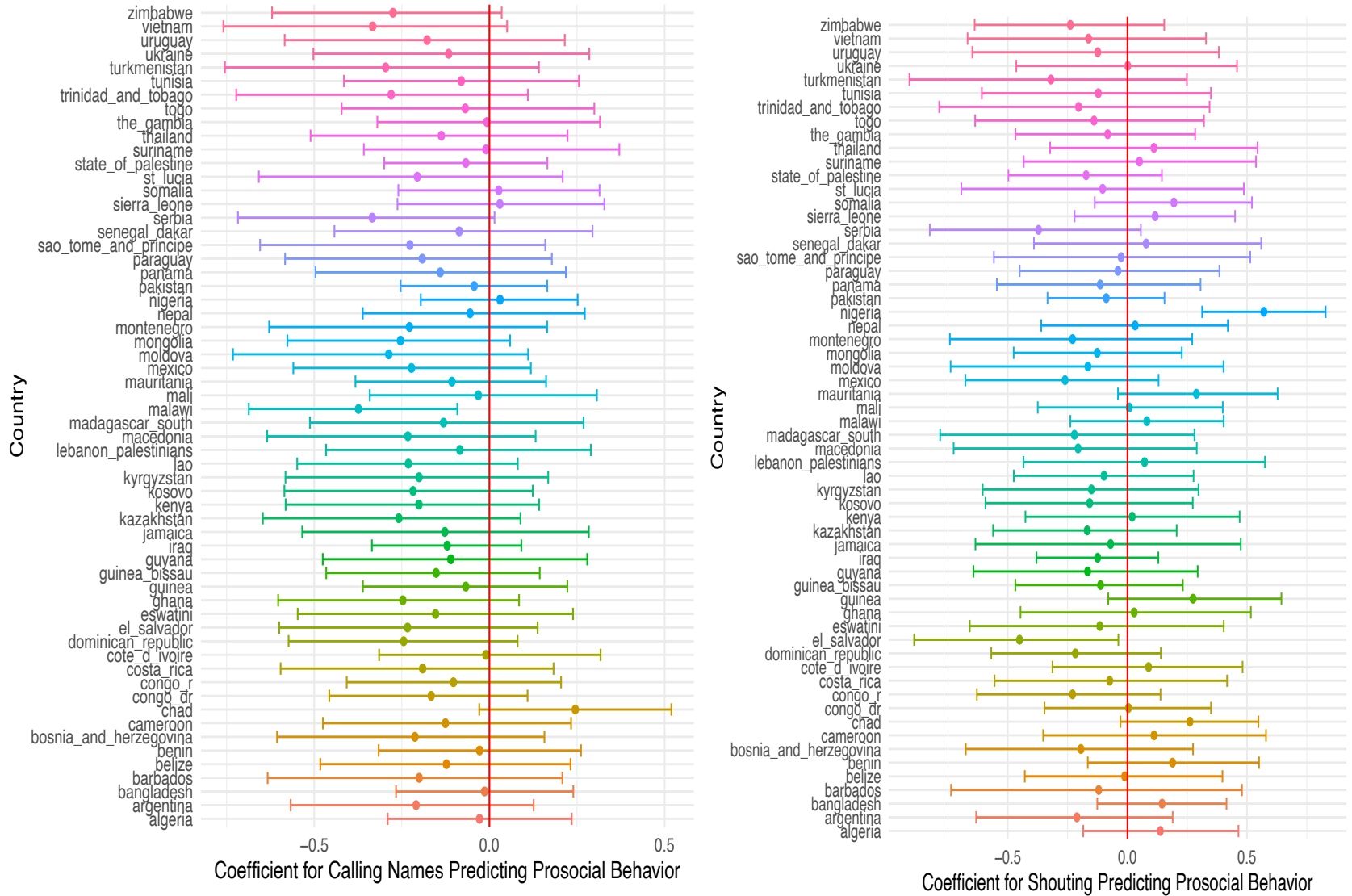
Figure 15. Random effects for calling names and shouting predicting the log odds of child prosocial behavior.
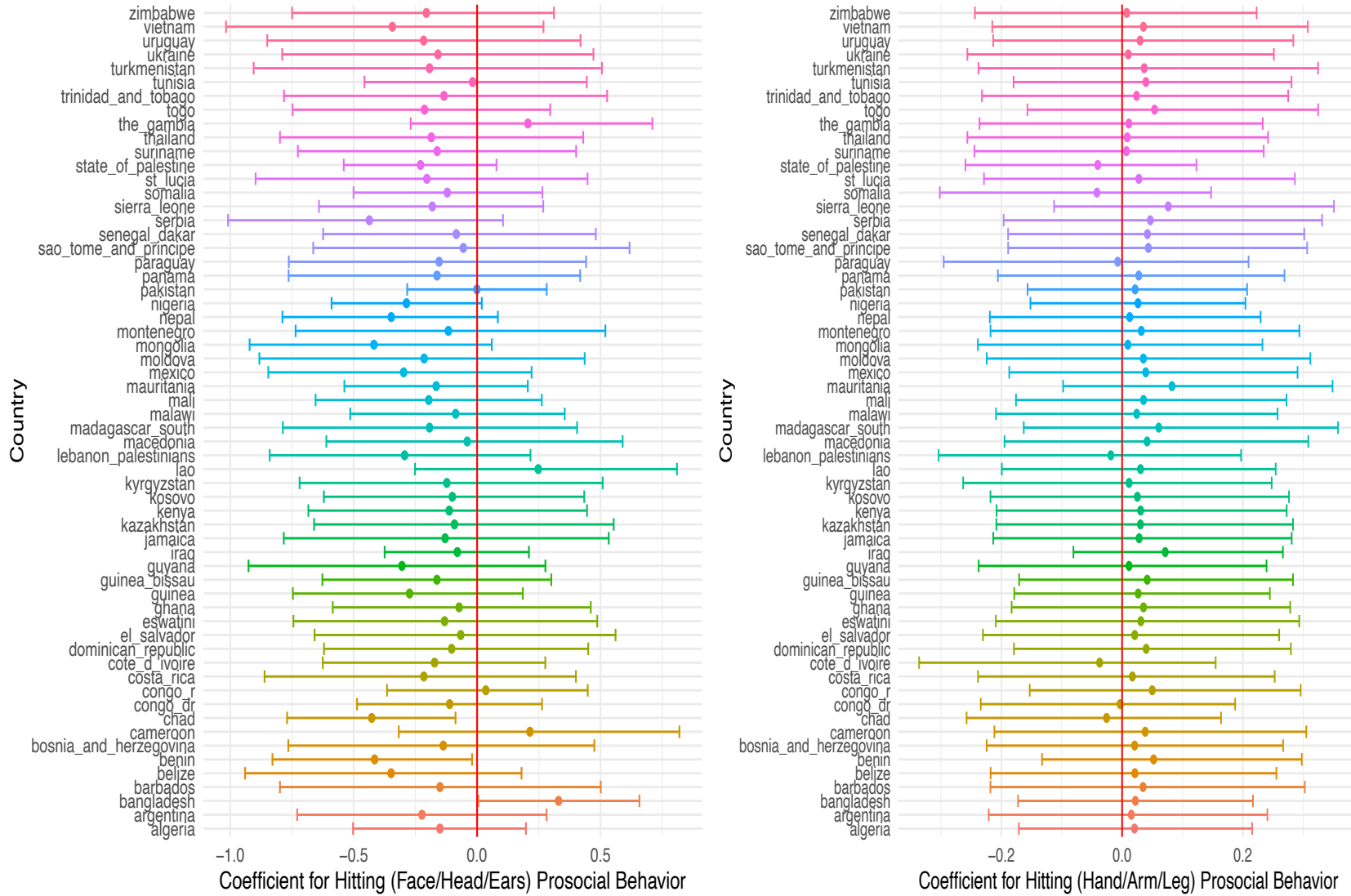
Figure 16. Random effects for hitting predicting the log odds of child prosocial behavior.
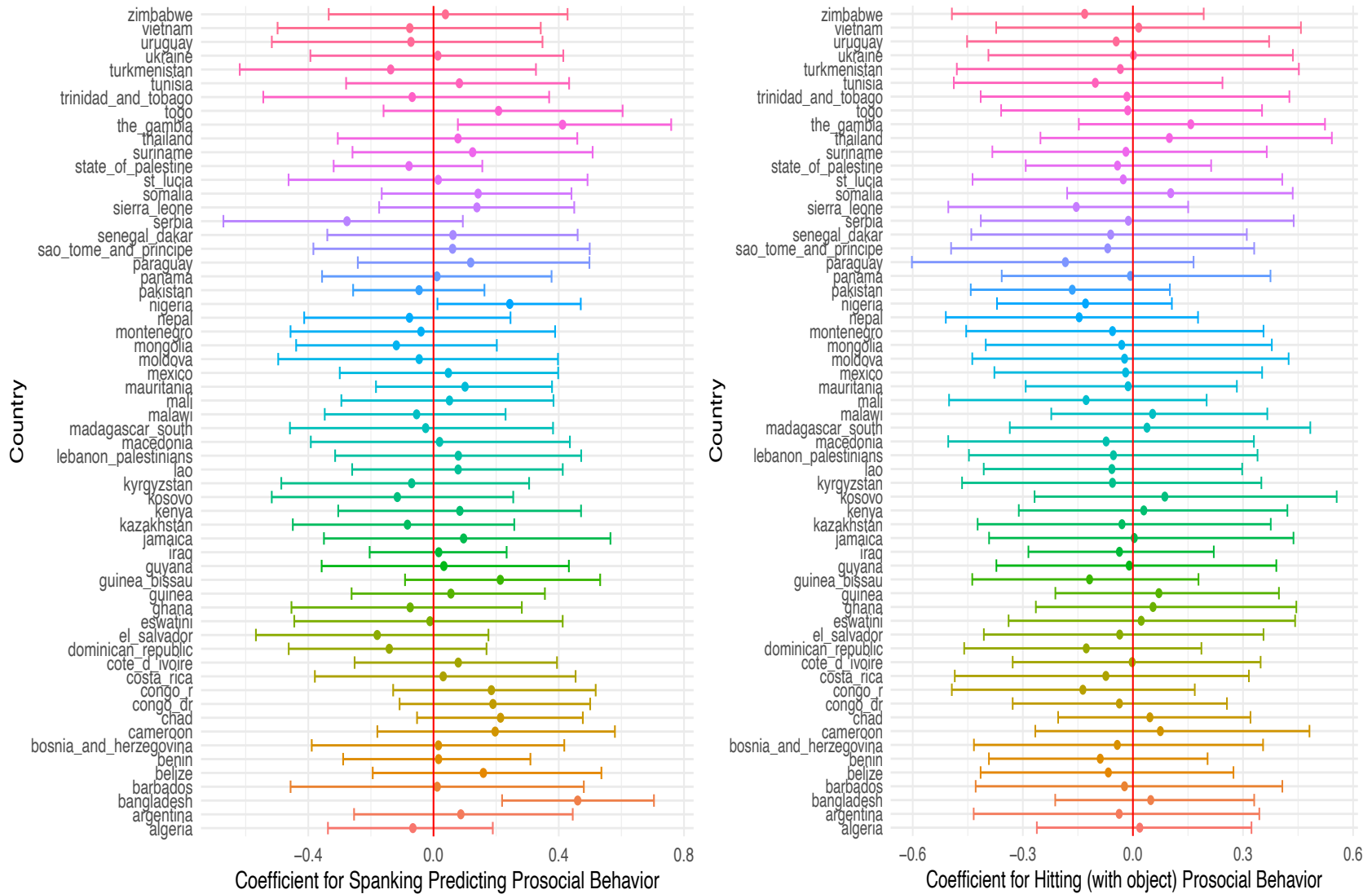
Figure 17. Random effects for spanking and hitting with an object predicting the log odds of child prosocial behavior.
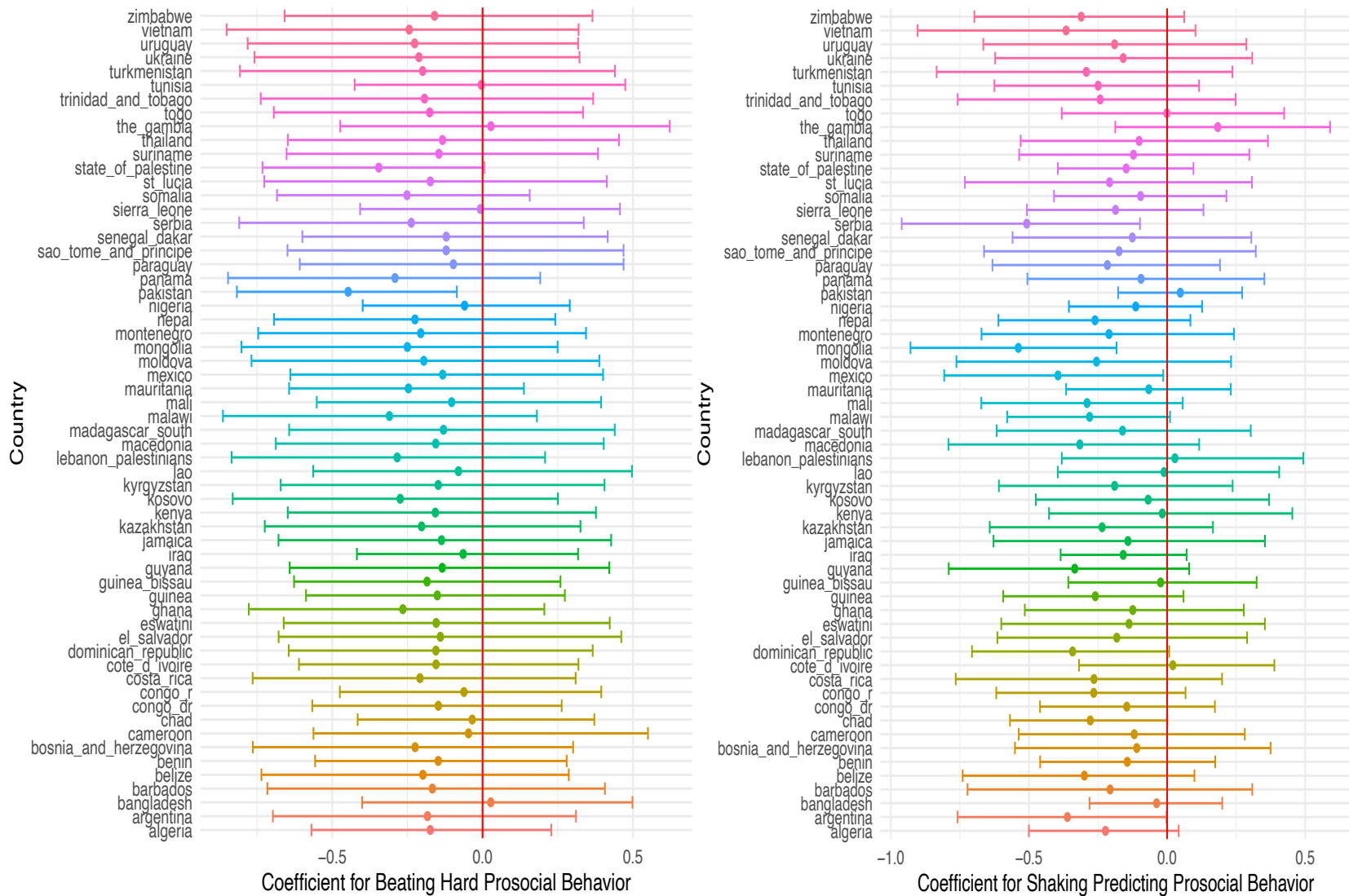
Figure 18. Random effects for beating as hard as one could and shaking predicting the log odds of child prosocial behavior.
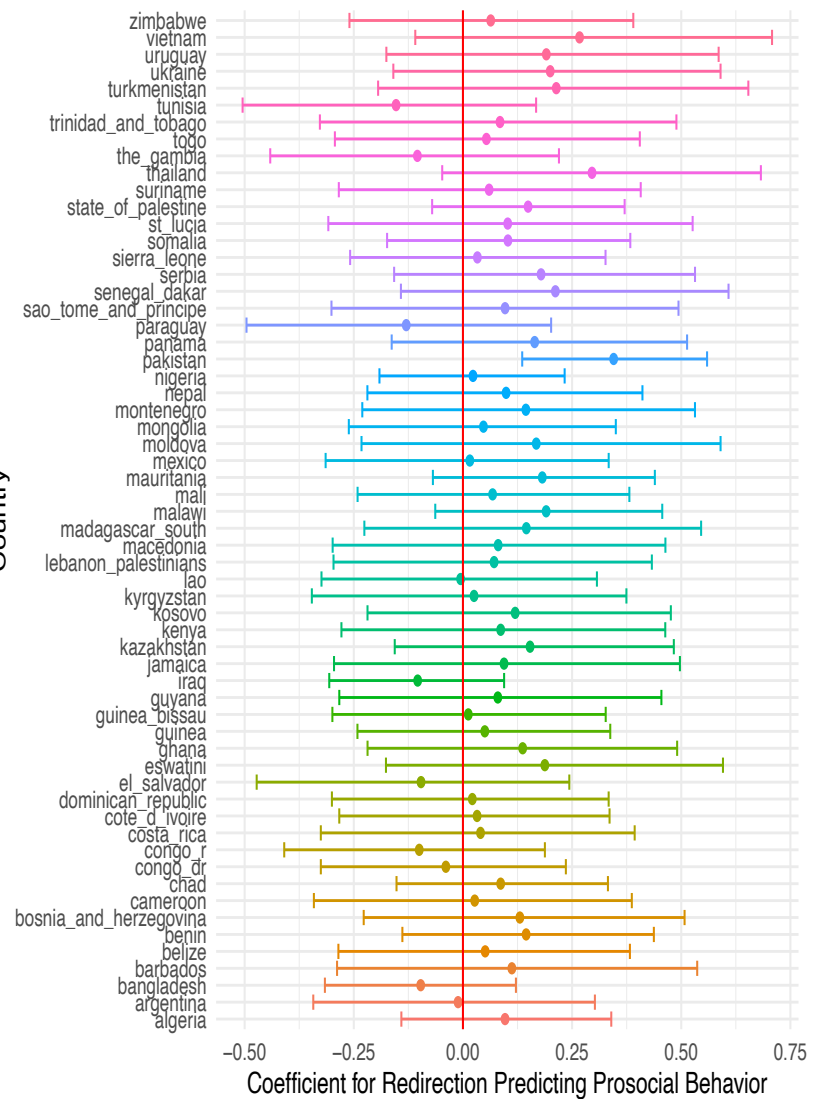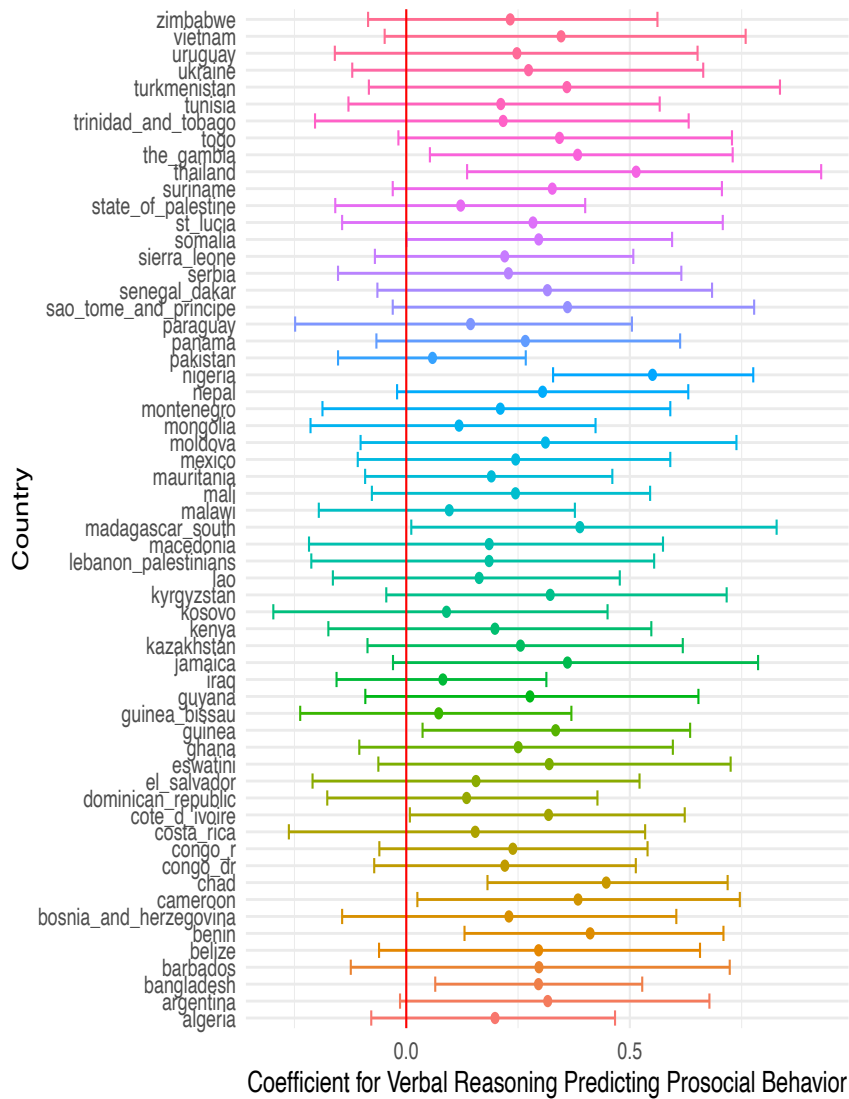
Figure 19. Random effects for verbal reasoning and redirection predicting the log odds of child prosocial behavior.
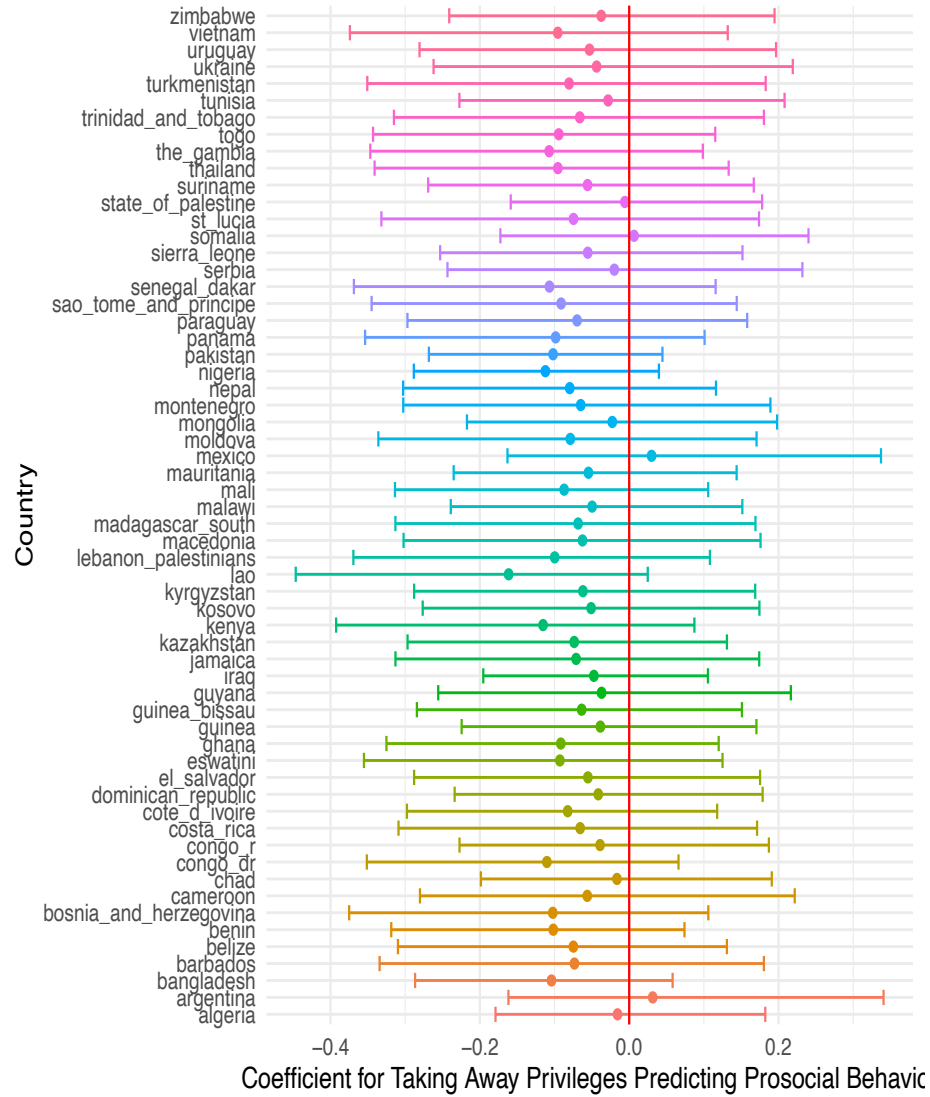
Figure 20. Random effects for taking away privileges predicting the log odds of child prosocial behavior.
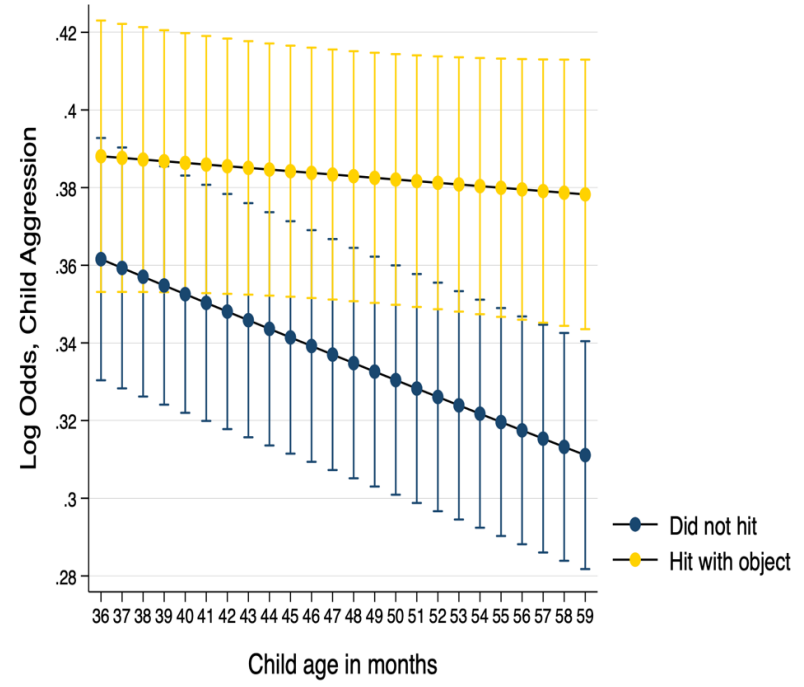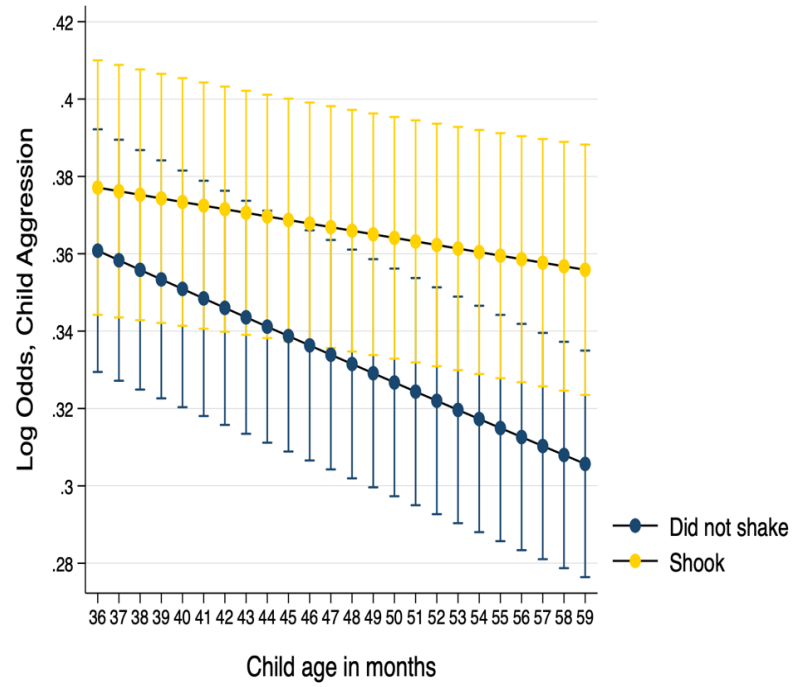
Figure 21. Interaction effects between child age and shaking and hitting the child with an object predicting child aggression.
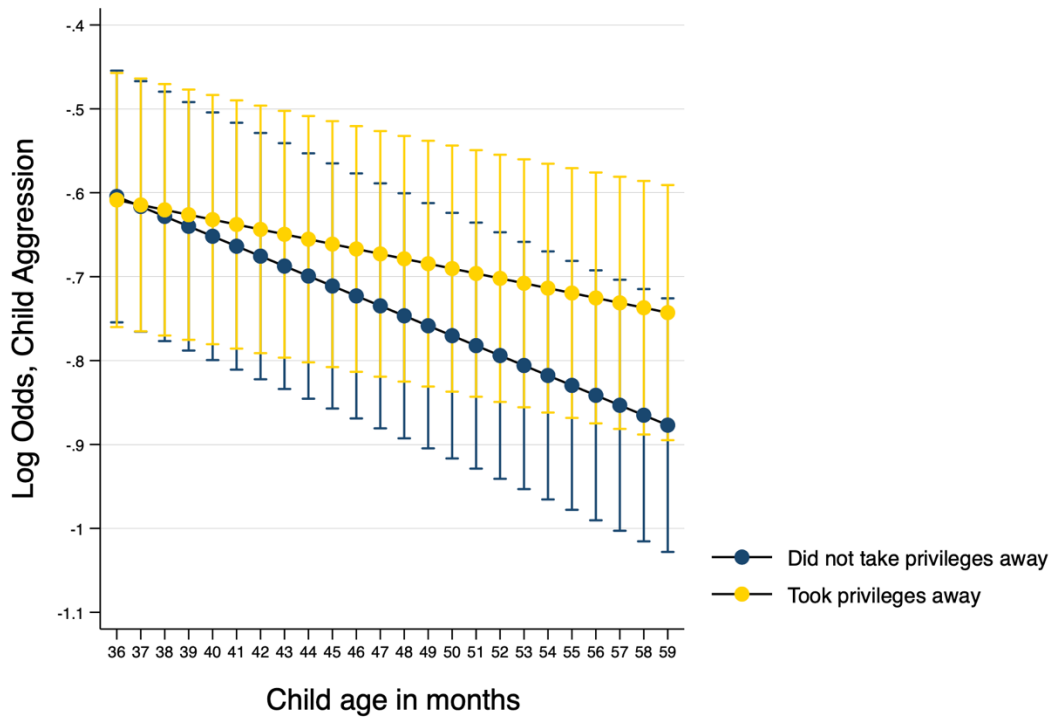
Figure 22. Interaction effects between child age and taking away privileges predicting child aggression.
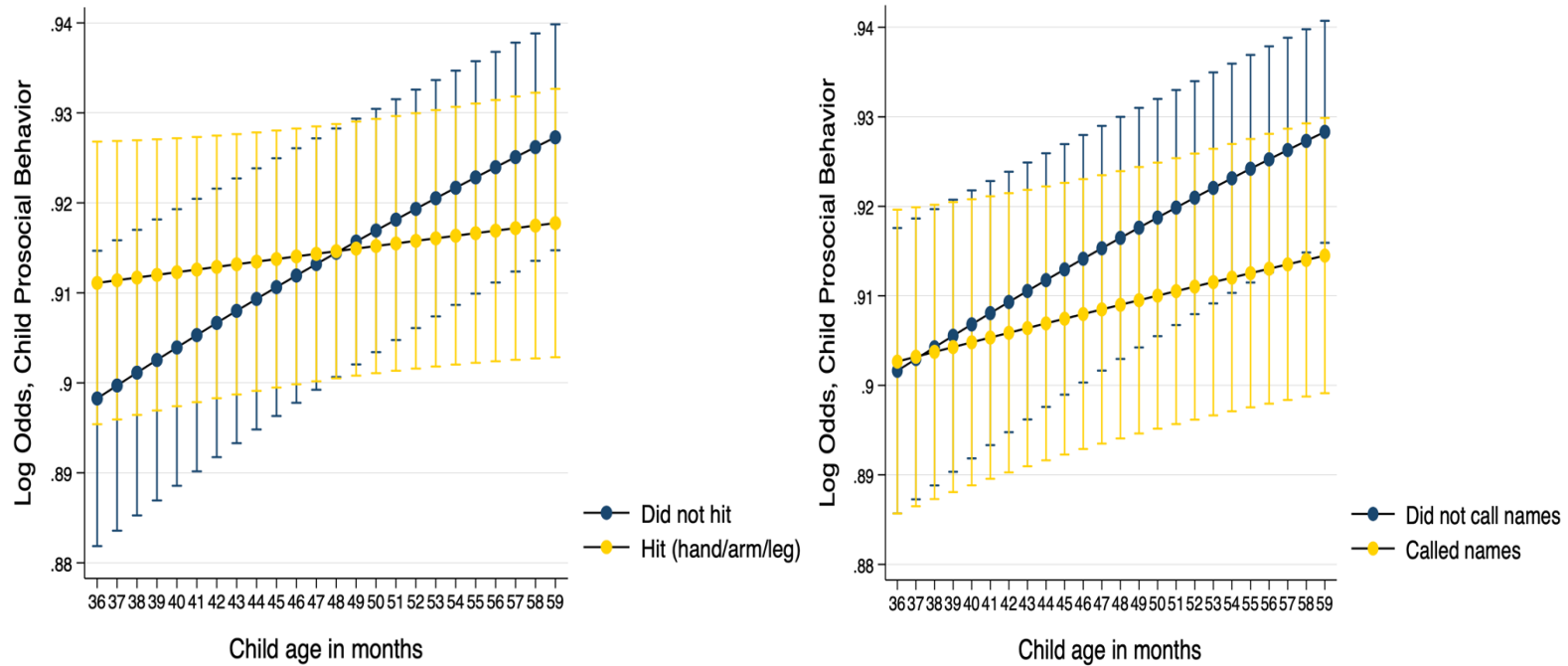
Figure 23. Interaction effects between child age and child being hit on the hand, arm, or leg and calling the child names predicting child prosocial behavior.
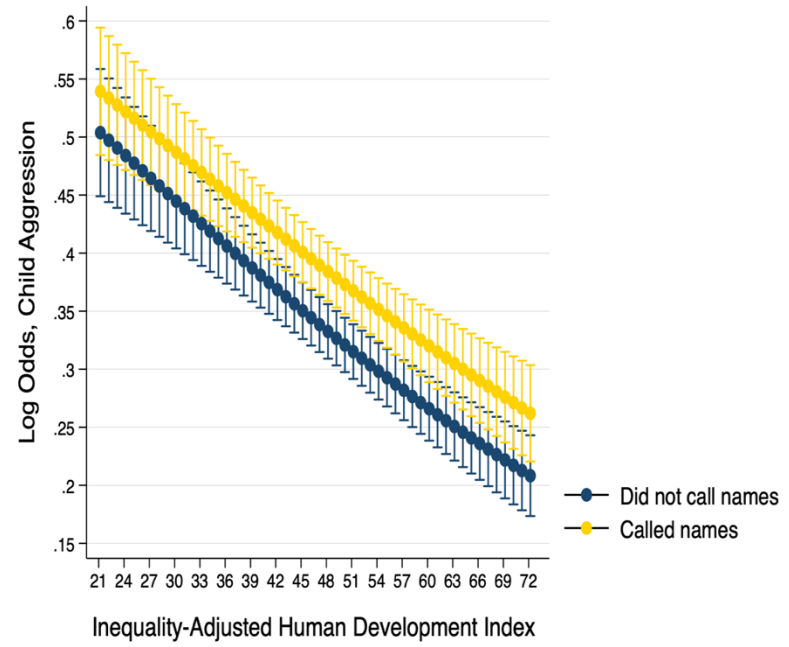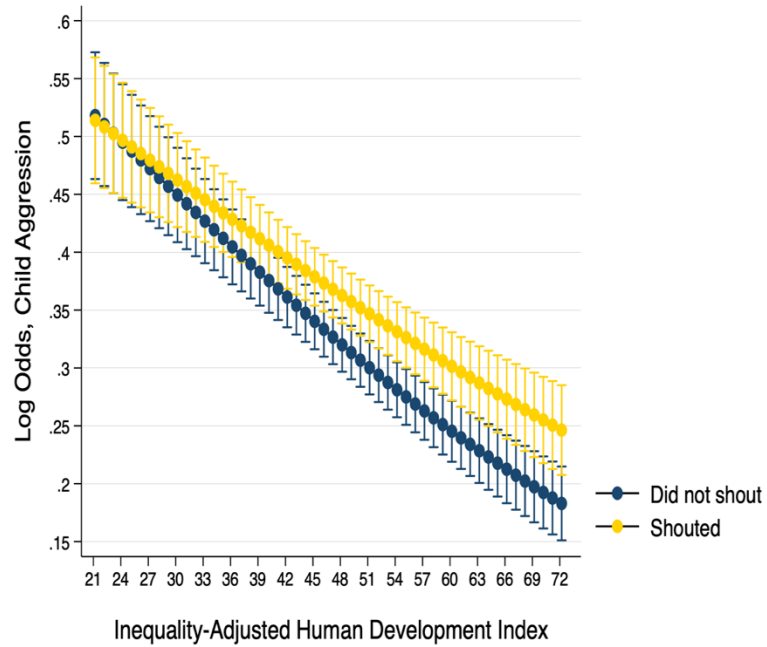
Figure 24. Interaction effects between Inequality-Adjusted Human Development Index and shouting and calling names predicting child aggression.
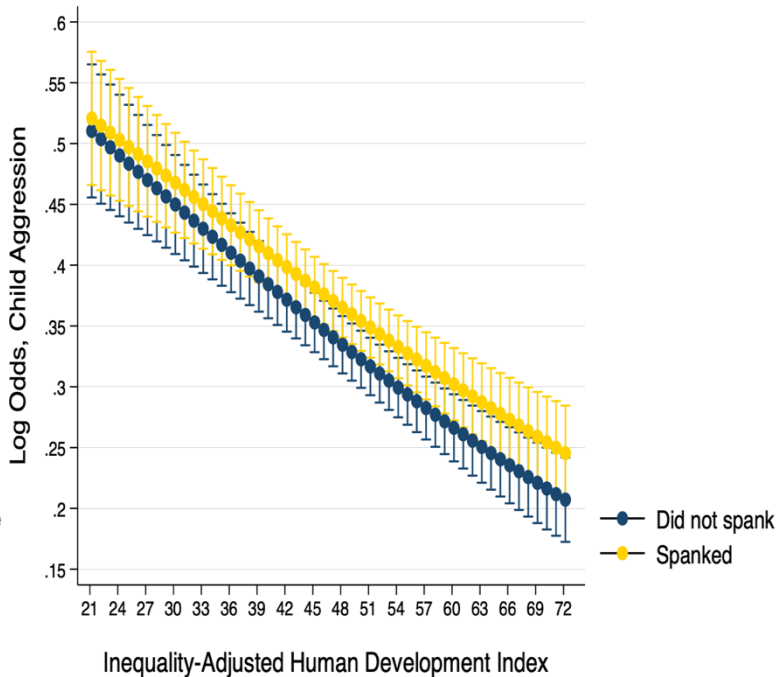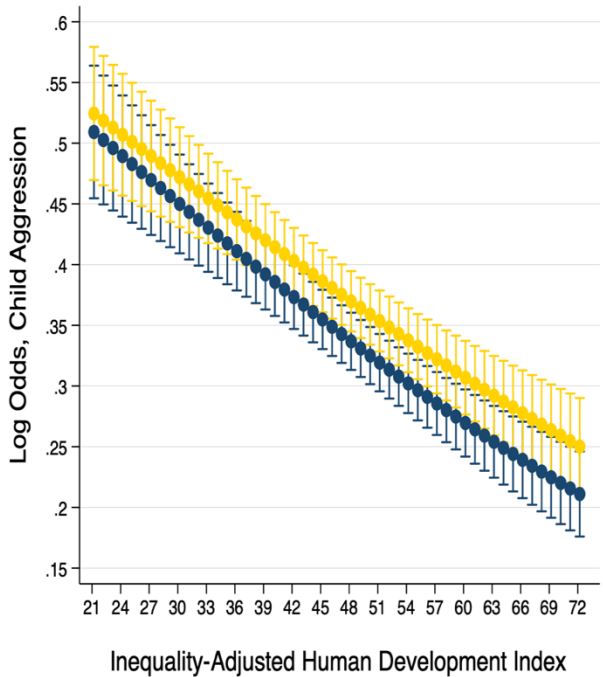
Figure 25. Interaction effects between Inequality-Adjusted Human Development Index and shaking and spanking predicting child aggression.
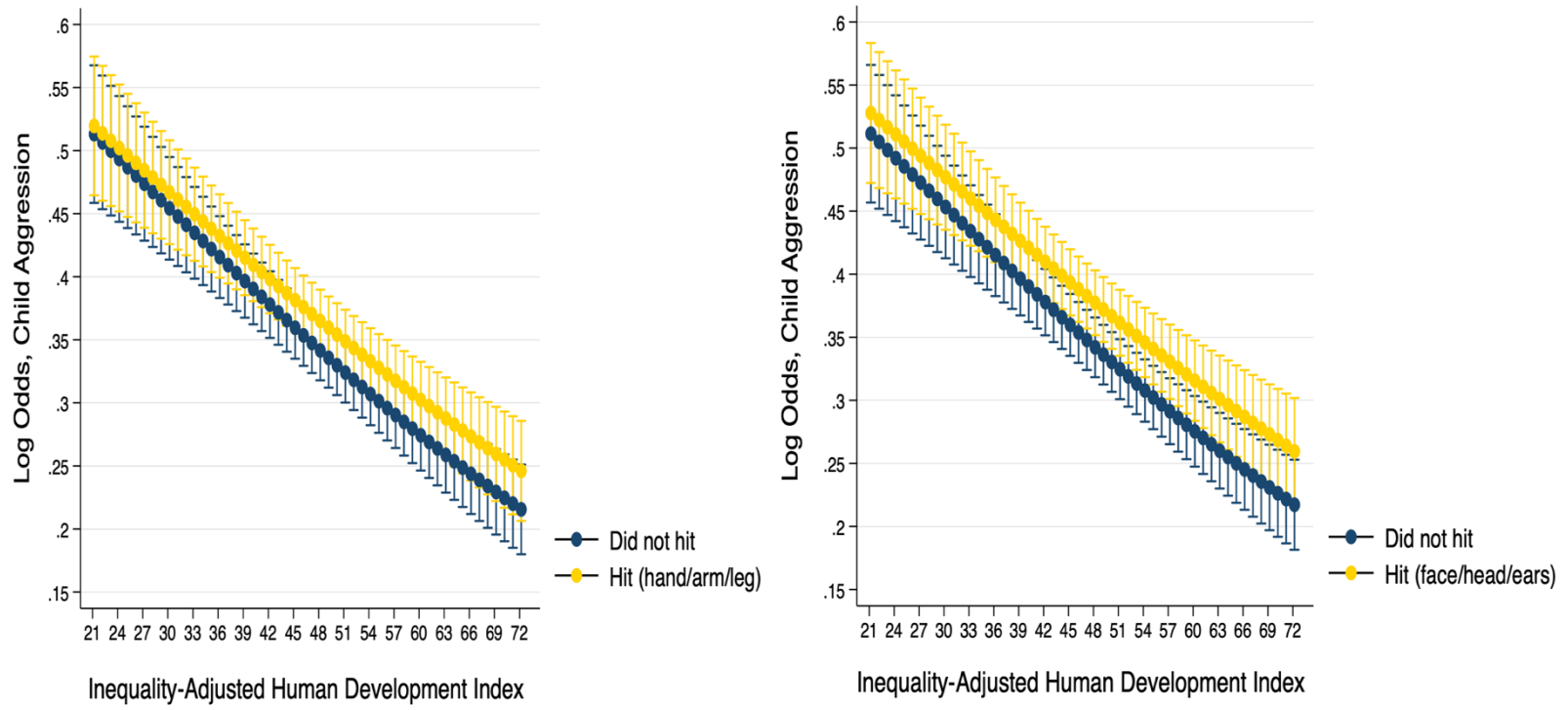
Figure 26. Interaction effects between Inequality-Adjusted Human Development Index and shaking and spanking predicting child aggression.
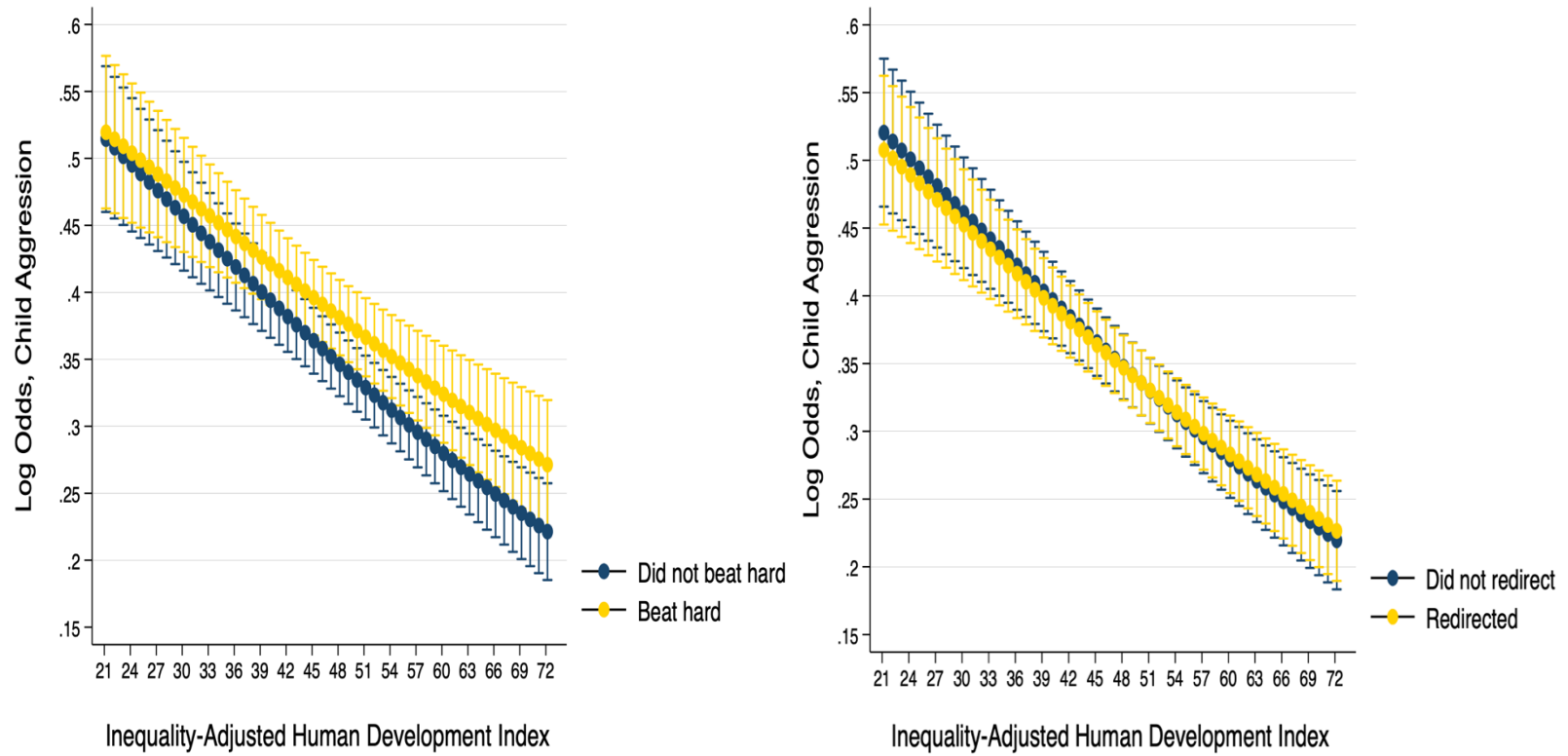
Figure 27. Interaction effects between Inequality-Adjusted Human Development Index and beating and redirecting predicting child aggression.
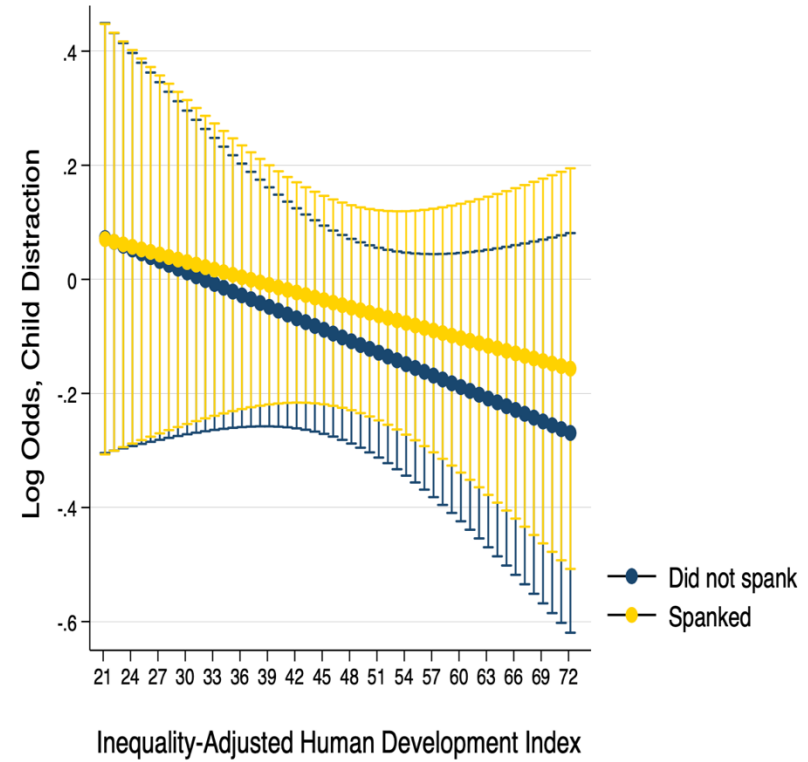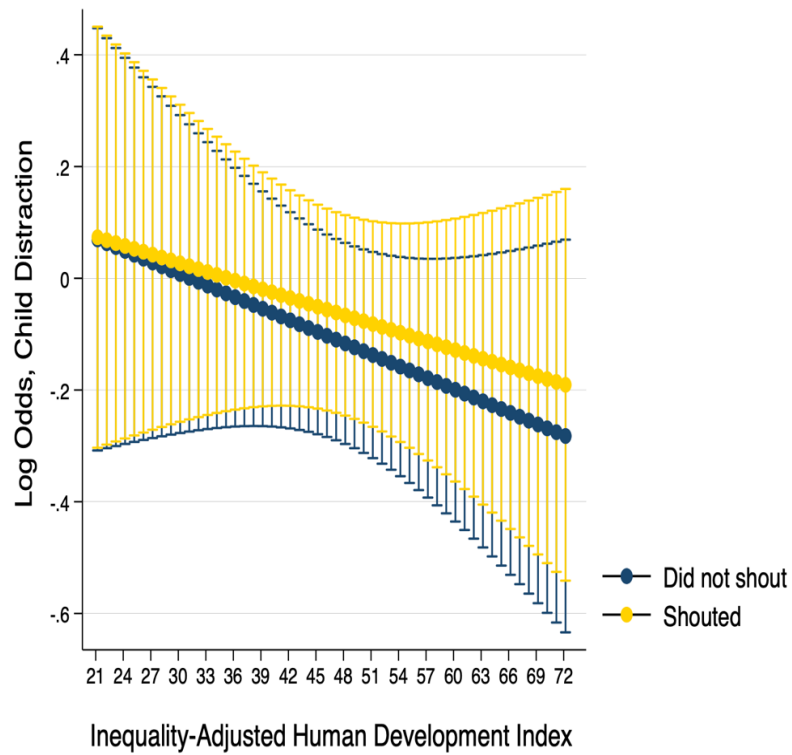
Figure 28. Interaction effects between Inequality-Adjusted Human Development Index and shouting and spanking predicting child distraction.
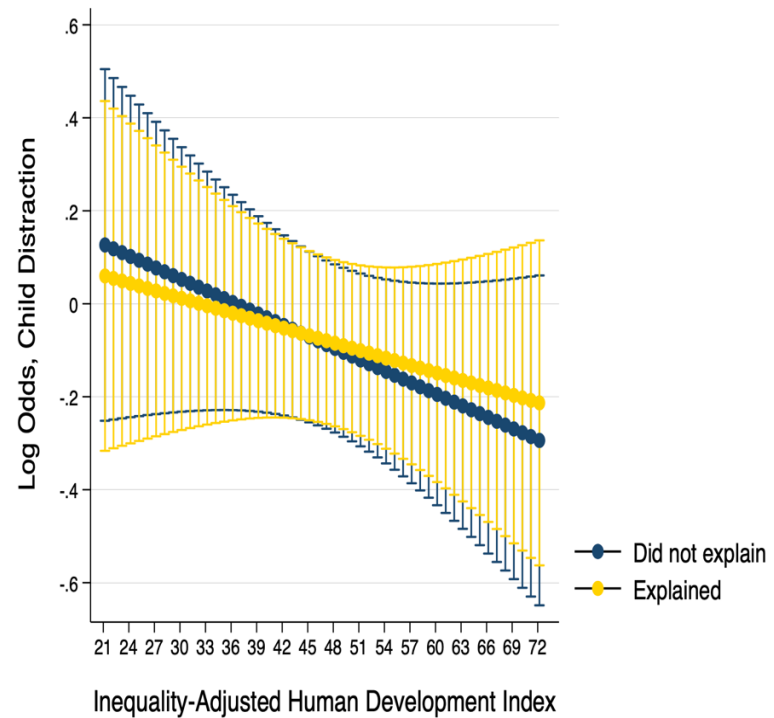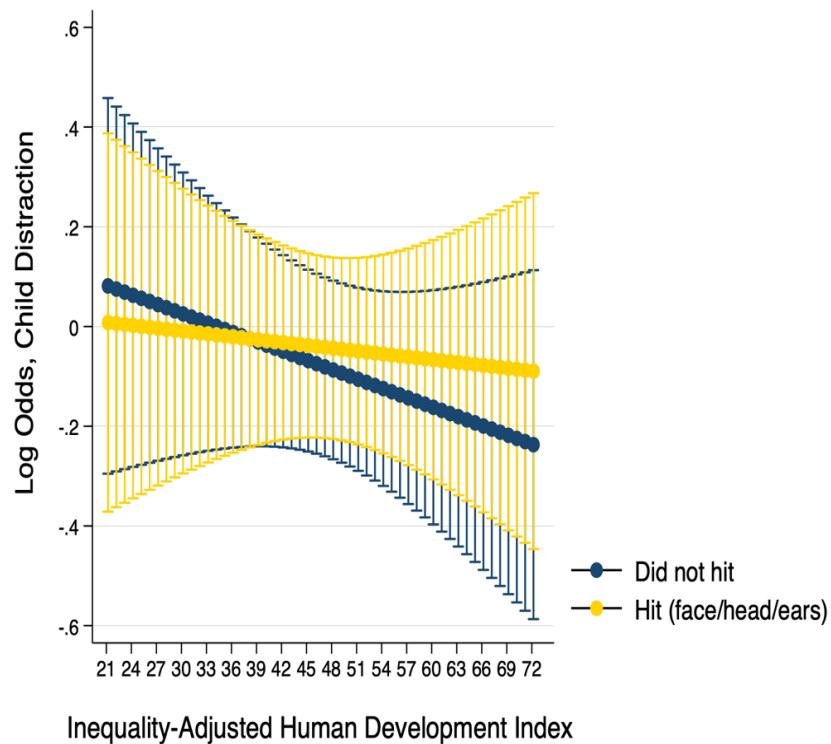
Figure 29. Interaction effects between Inequality-Adjusted Human Development Index and hitting on the face, head, or ears and verbal reasoning predicting child distraction.
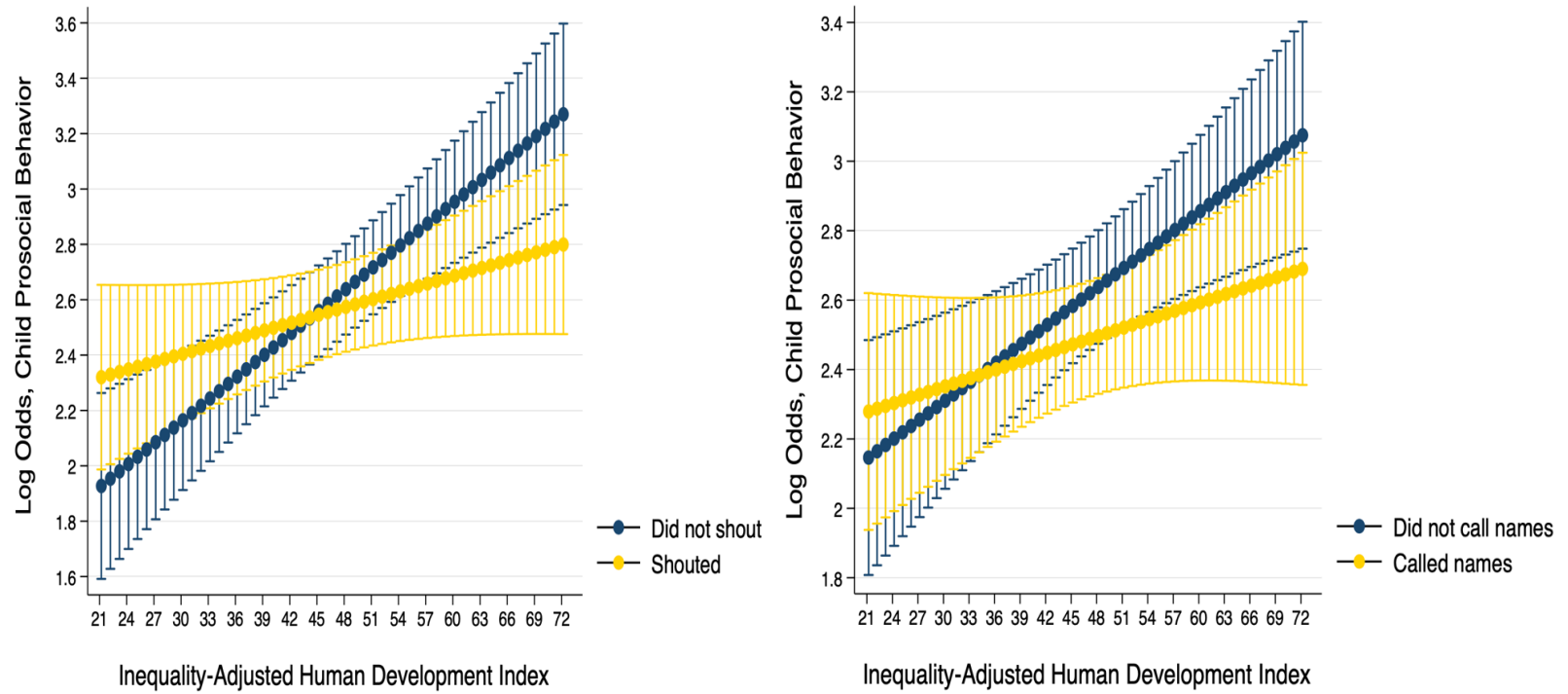
Figure 30. Interaction effects between Inequality-Adjusted Human Development Index and shouting and calling names predicting child prosocial behavior.
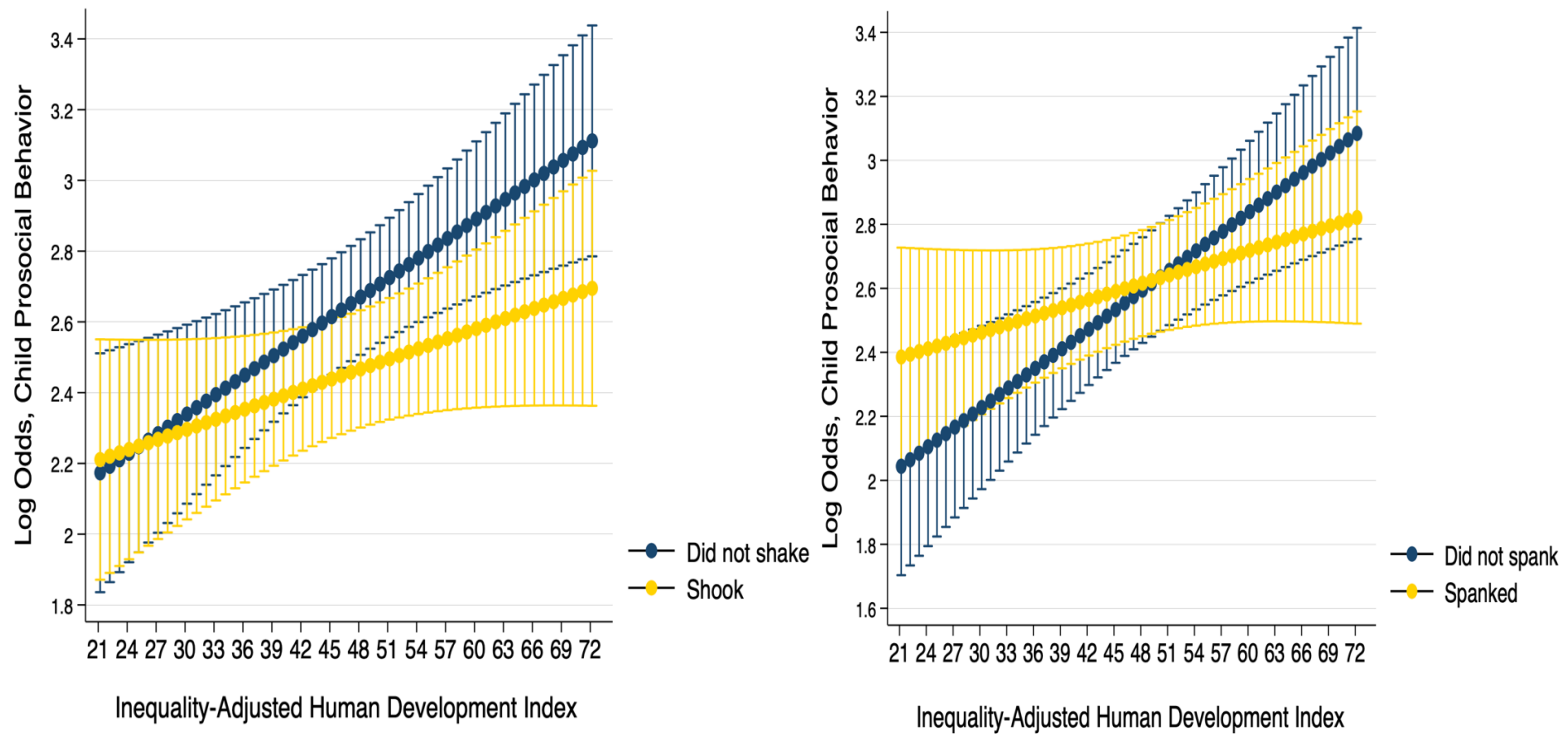
Figure 31. Interaction effects between Inequality-Adjusted Human Development Index and shaking and spanking predicting child prosocial behavior.
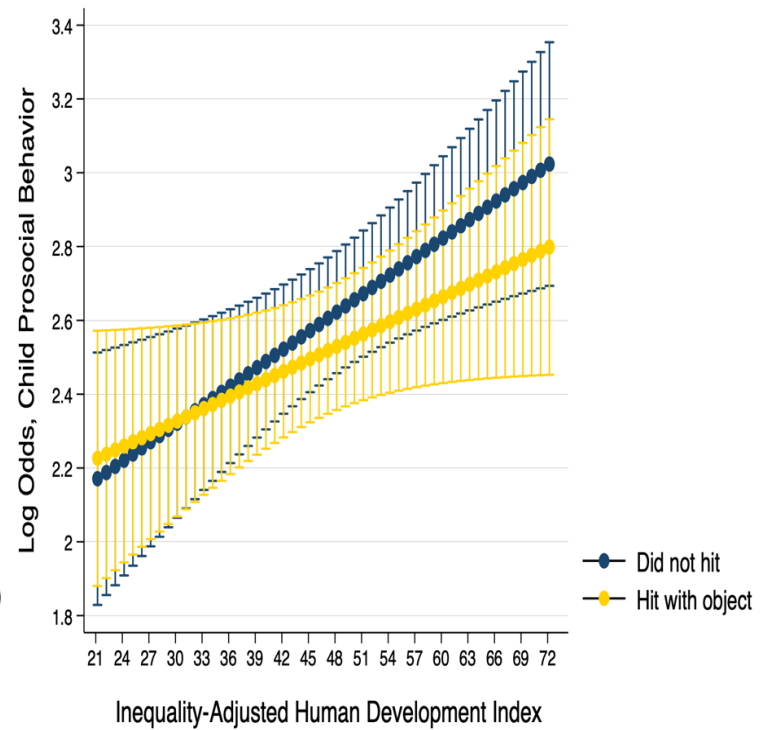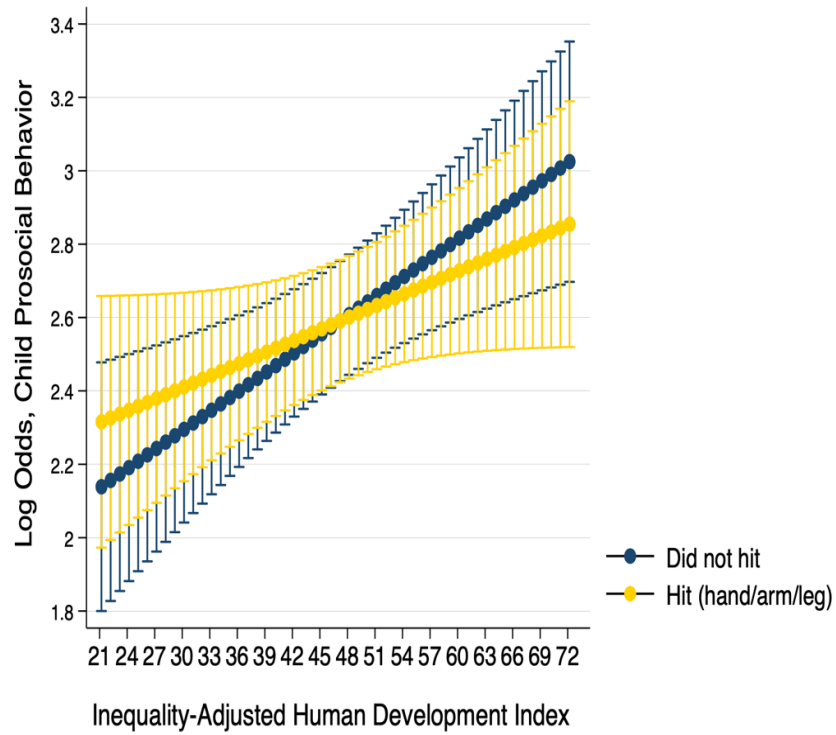
Figure 32. Interaction effects between Inequality-Adjusted Human Development Index and hitting predicting child prosocial behavior.
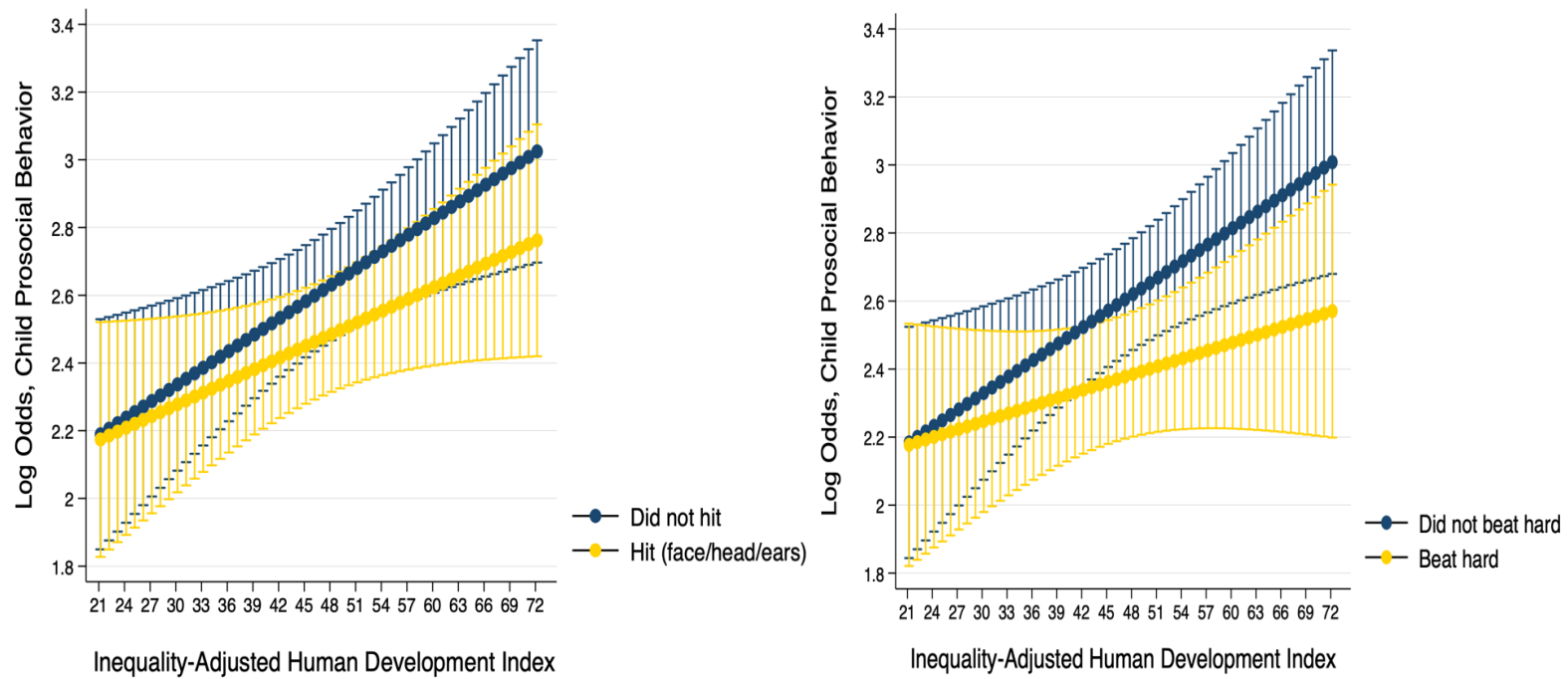
Figure 33. Interaction effects between Inequality-Adjusted Human Development Index and hitting on the face, head, or ears and beating as hard as one could predicting child prosocial behavior.
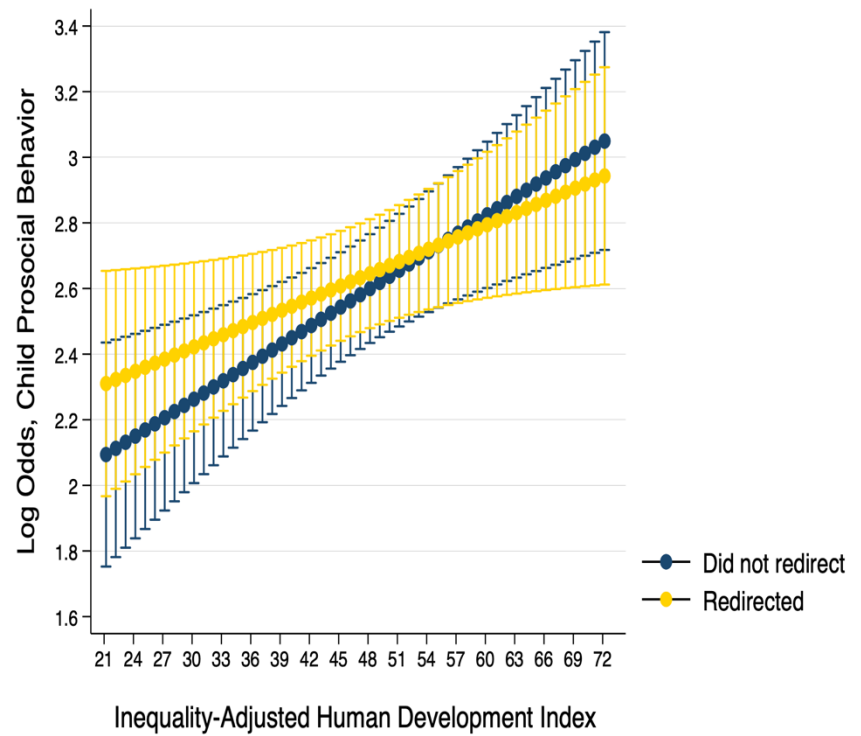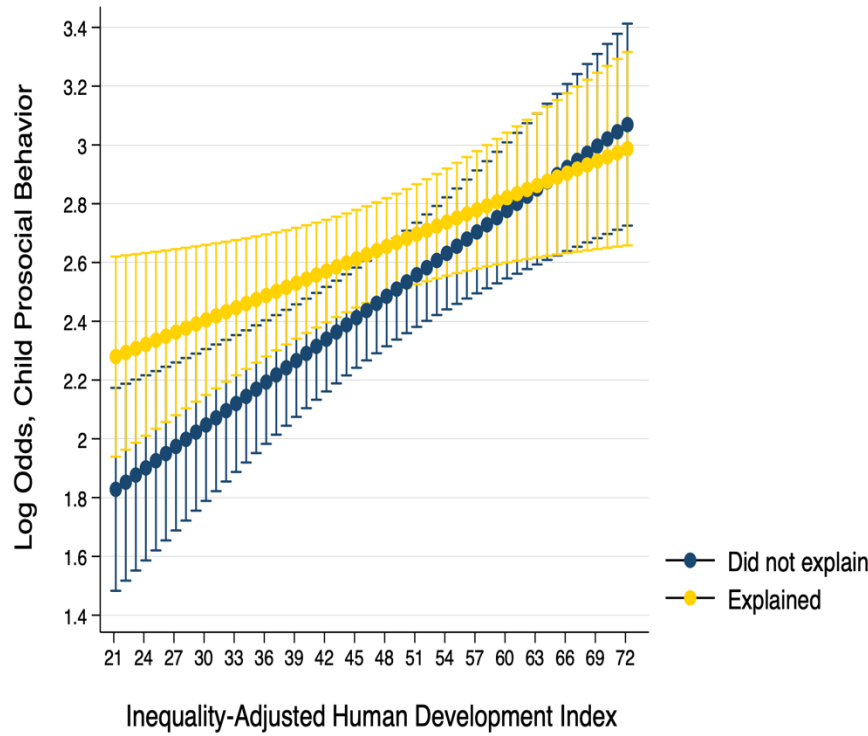
Figure 34. Interaction effects between Inequality-Adjusted Human Development Index and verbal reasoning and redirecting predicting child aggression.
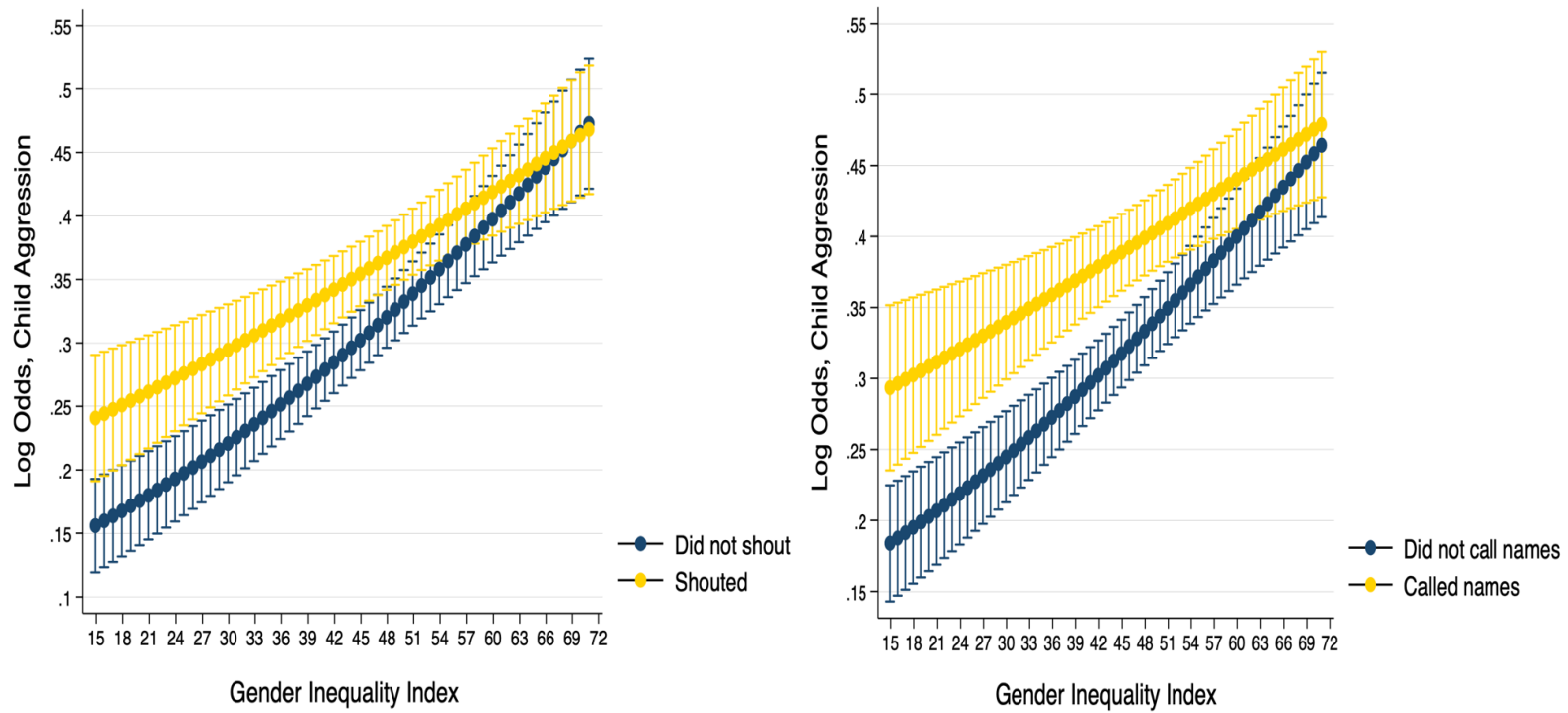
Figure 35. Interaction effects between Gender Inequality Index and shouting and calling names predicting child aggression.
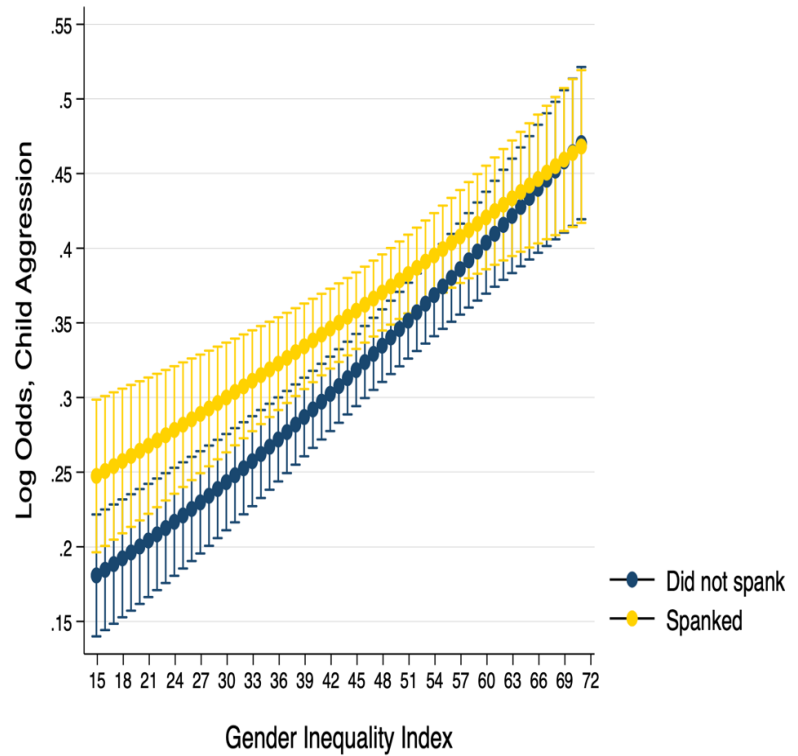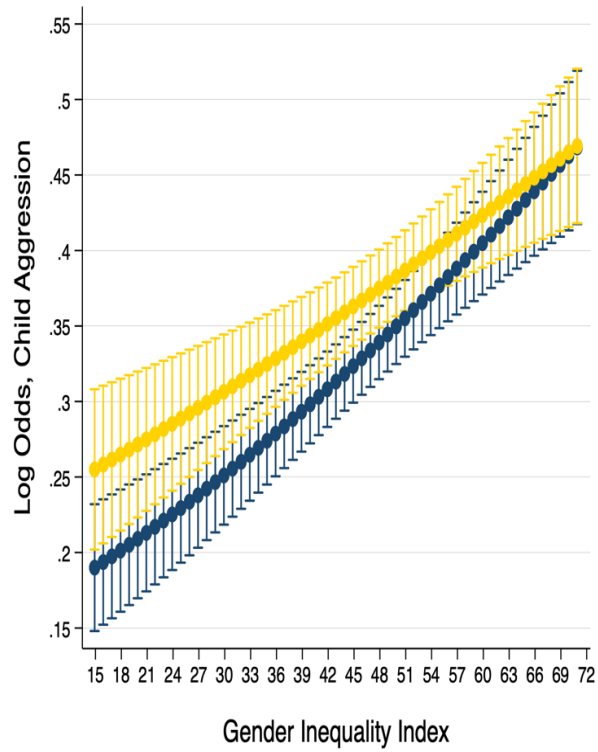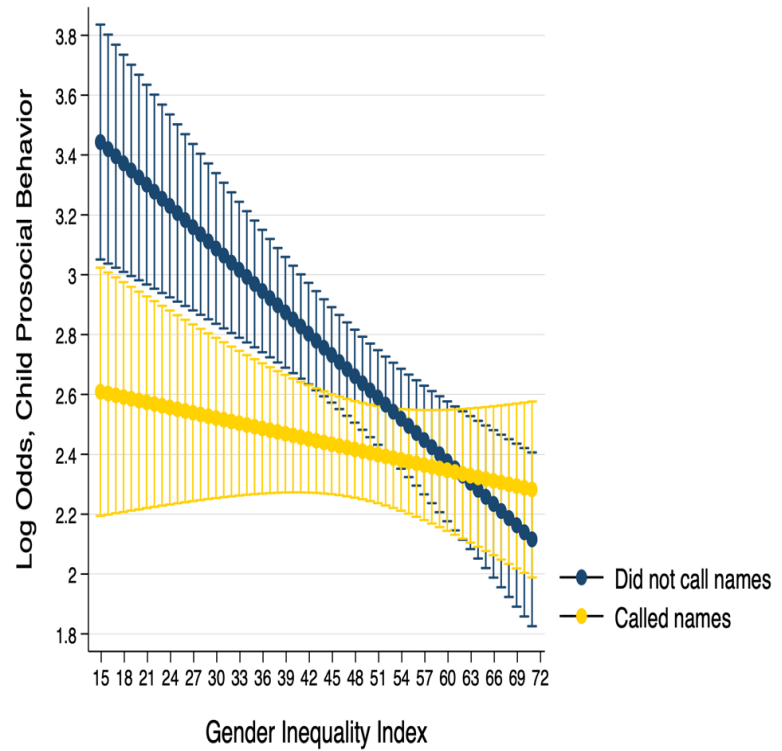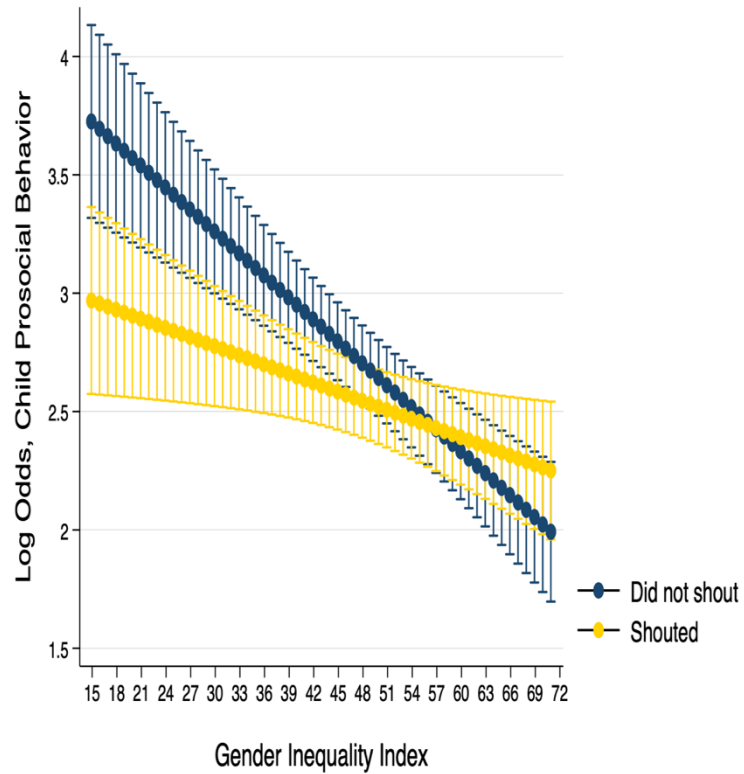
Figure 36. Interaction effects between Gender Inequality Index and shaking and spanking predicting child aggression.
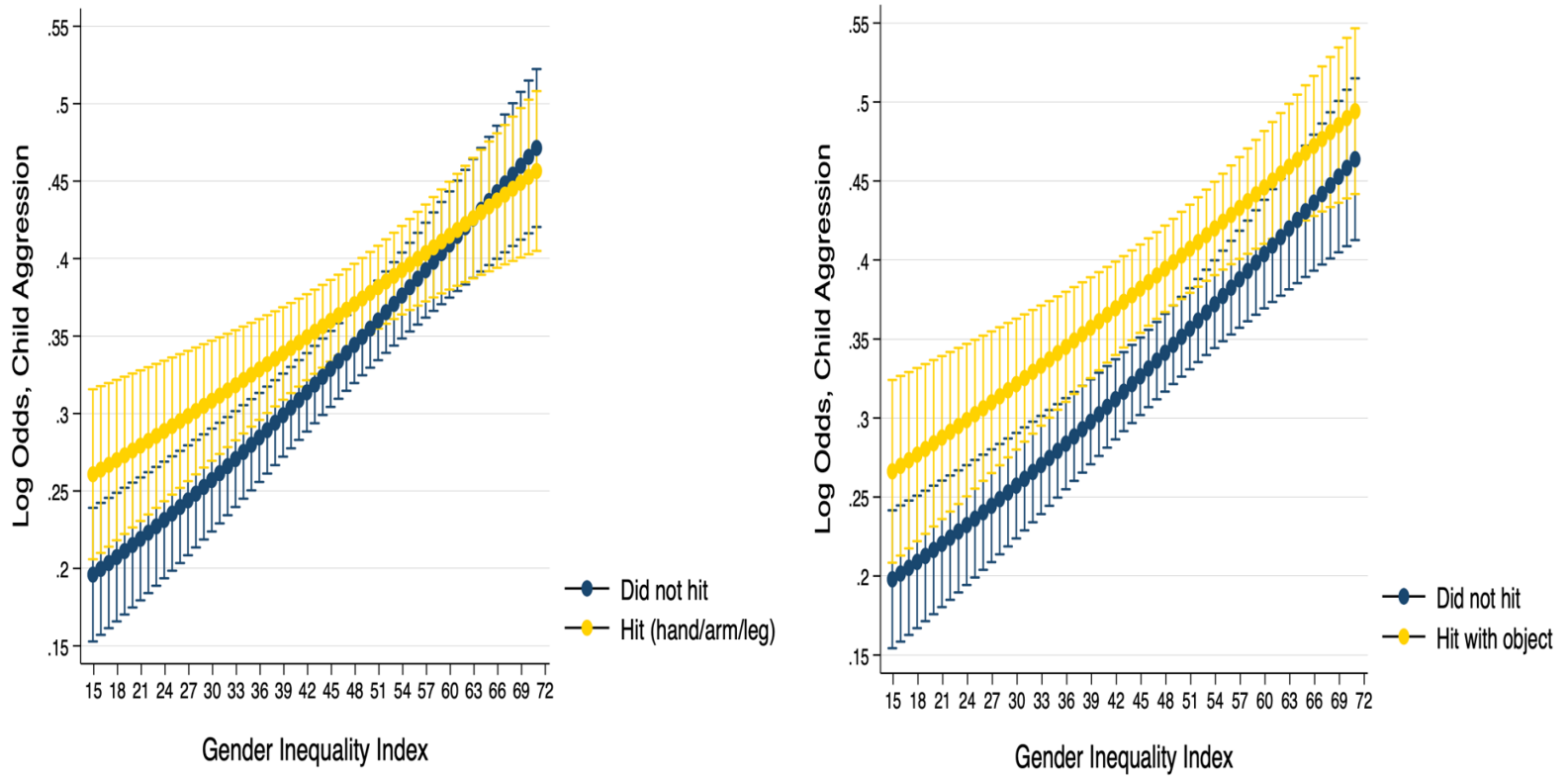
Figure 37. Interaction effects between Gender Inequality Index and hitting predicting child aggression.
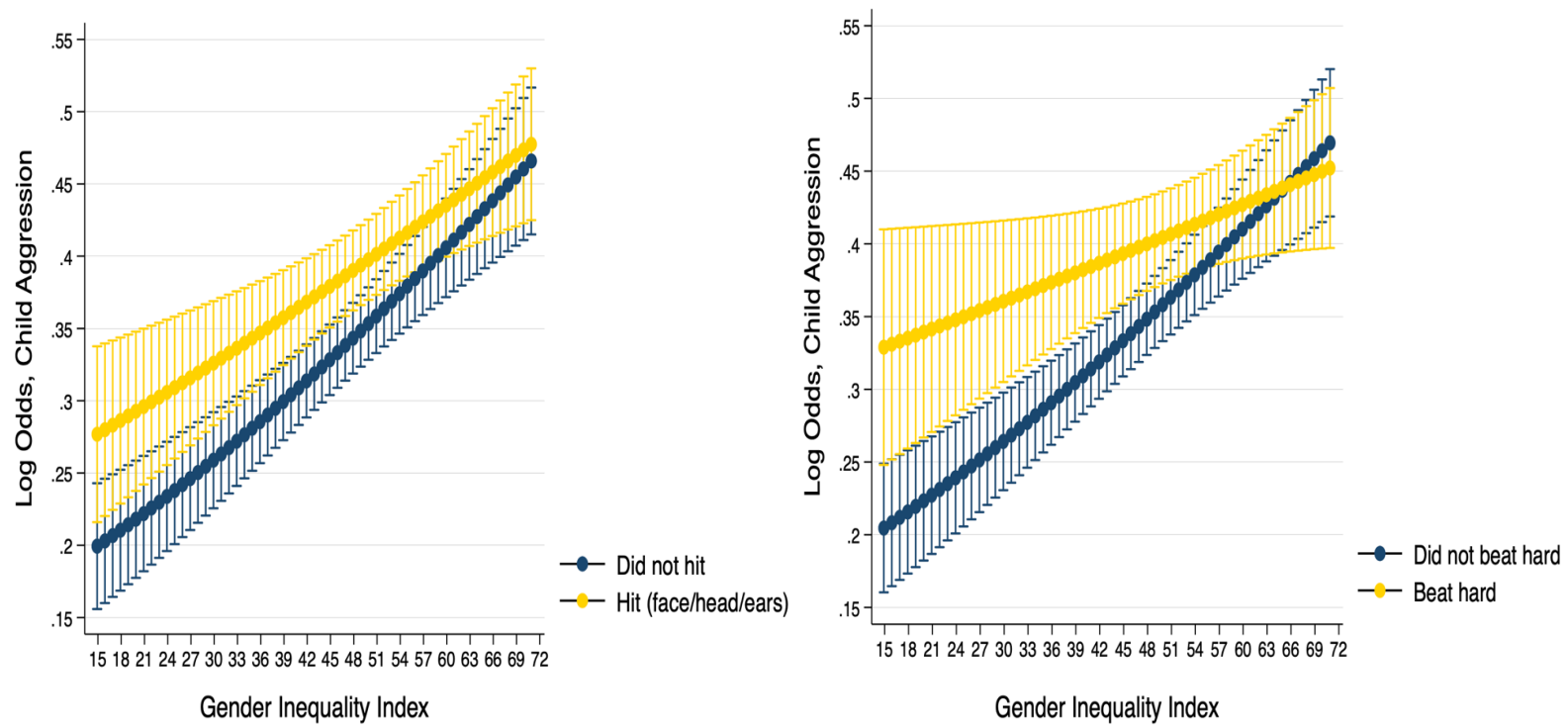
Figure 38. Interaction effects between Gender Inequality Index and hitting on the face, head, or ears and beating as hard as one could predicting child aggression.
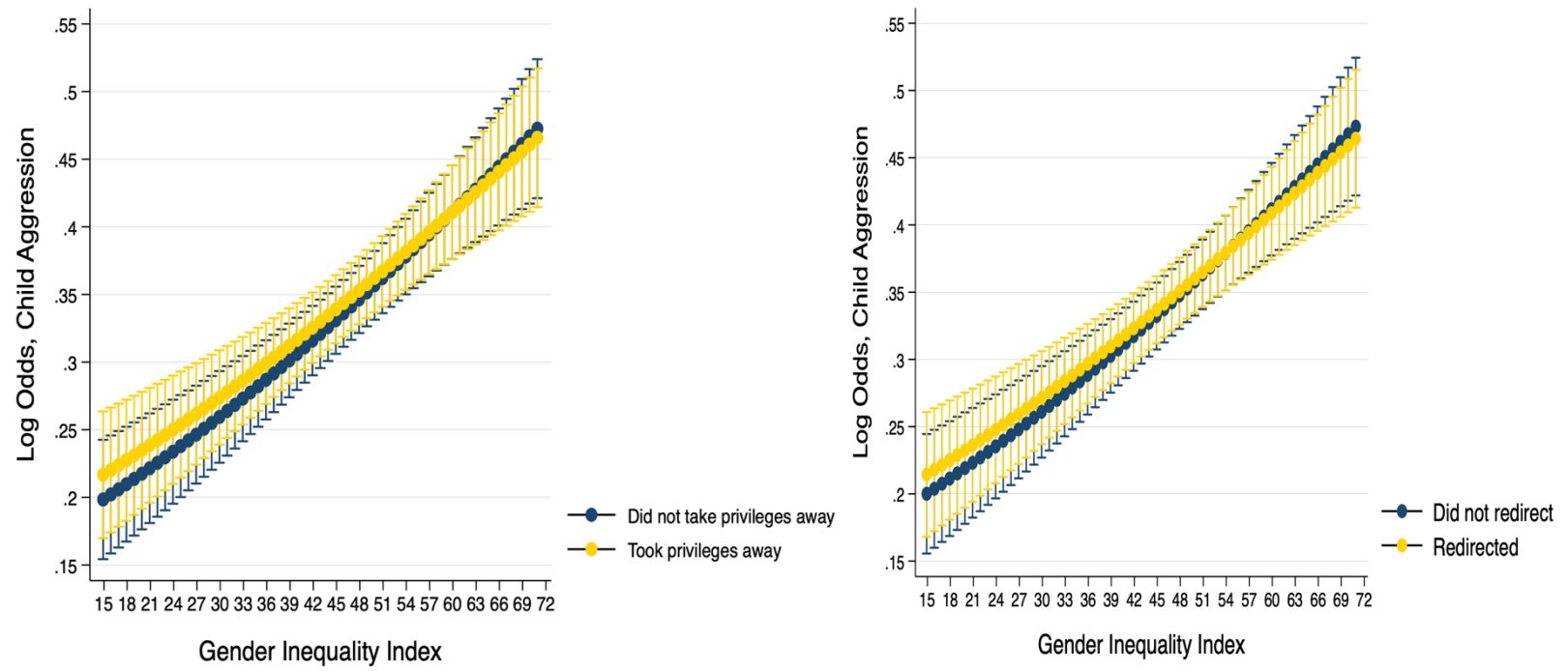
Figure 39. Interaction effects between Gender Inequality Index and taking away privileges and redirection predicting child aggression.
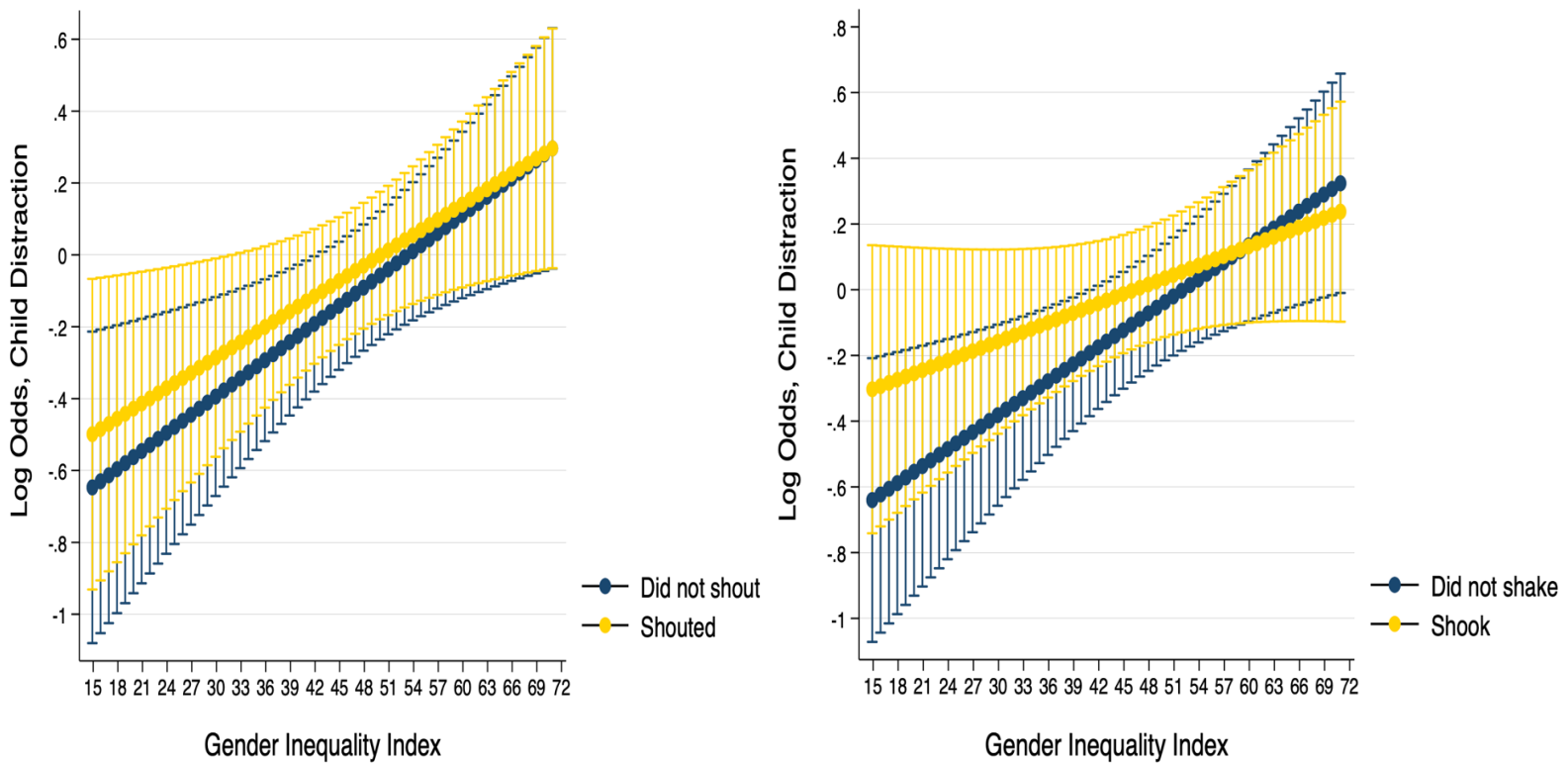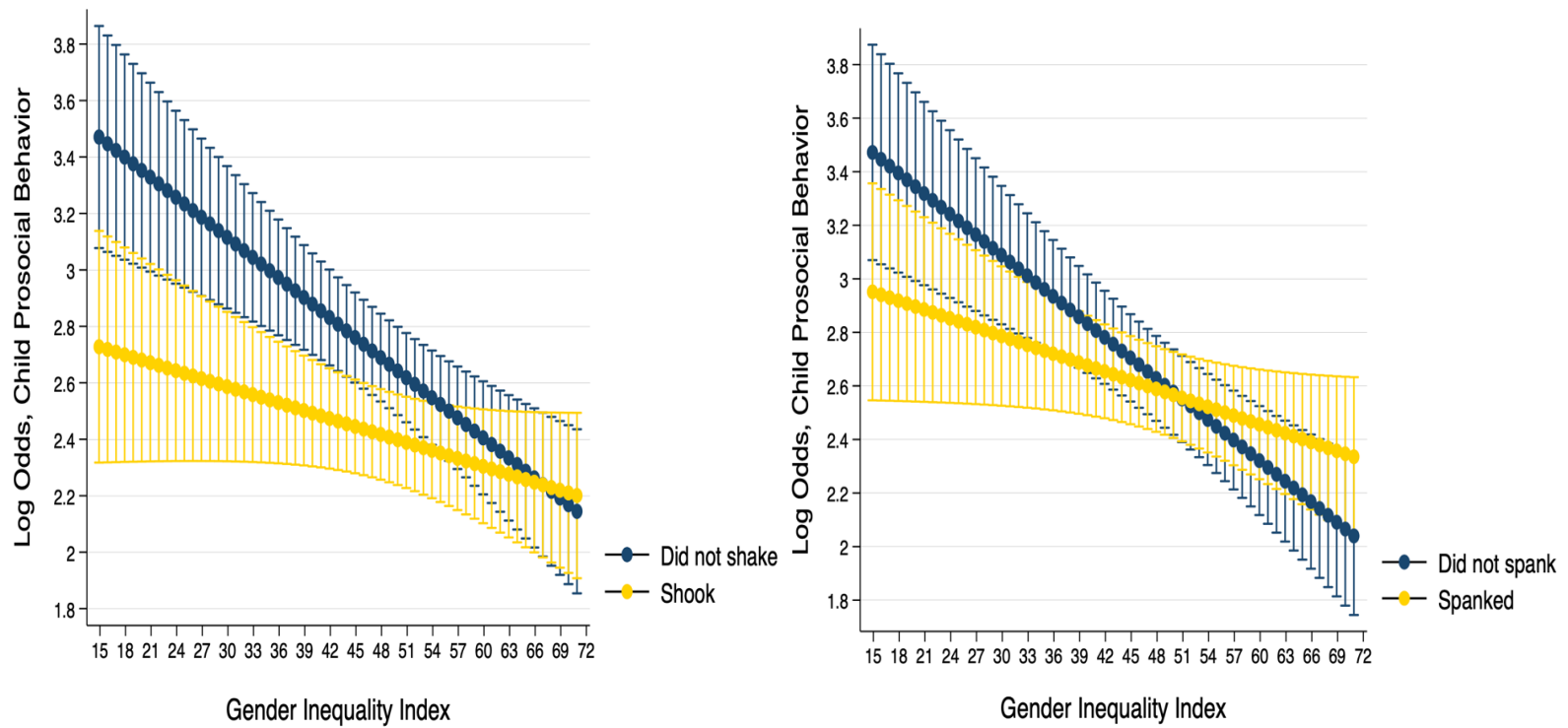
Figure 40. Interaction effects between Gender Inequality Index and shouting and shaking predicting child aggression.
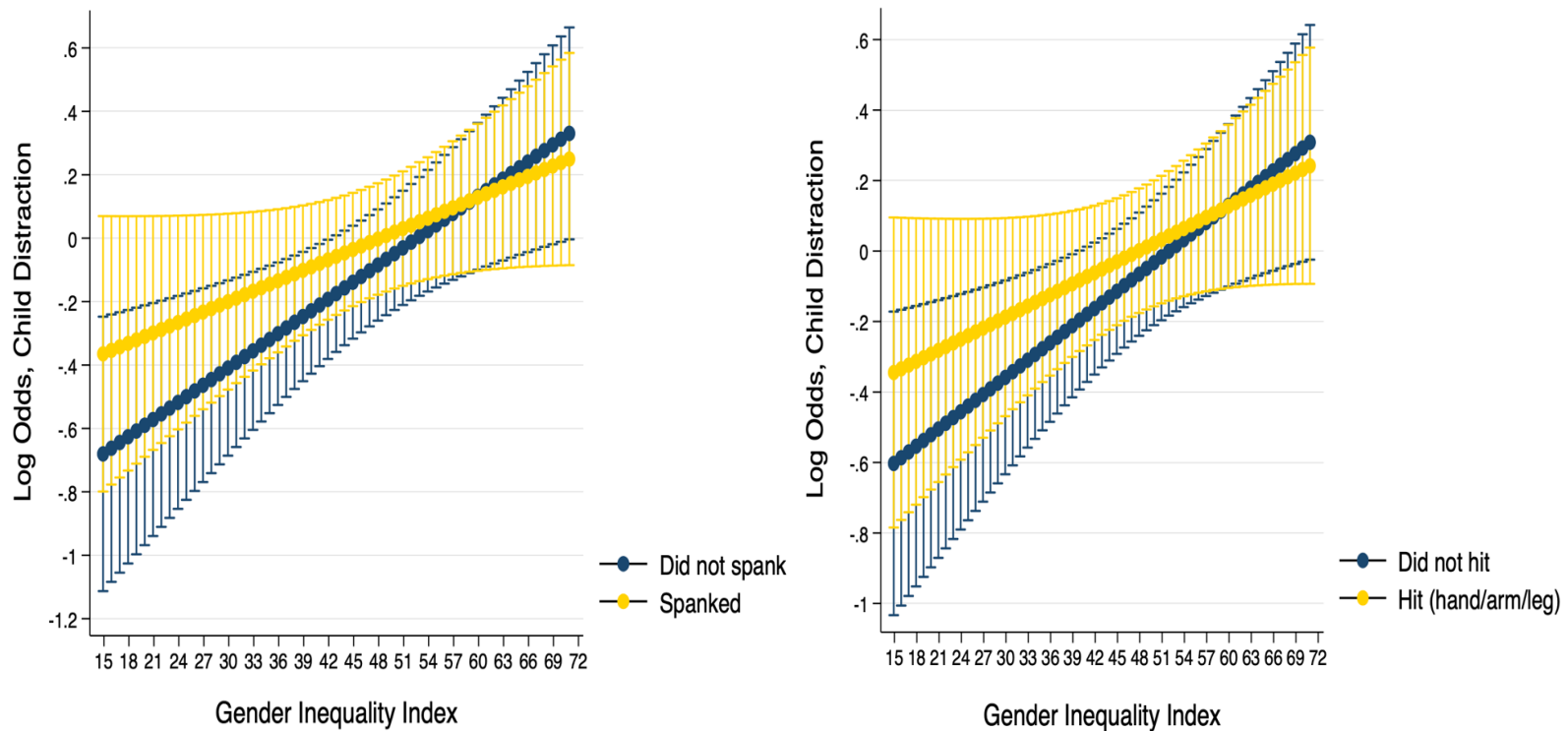
Figure 41. Interaction effects between Gender Inequality Index and spanking and hitting on the hand, arm, or leg predicting child distraction.

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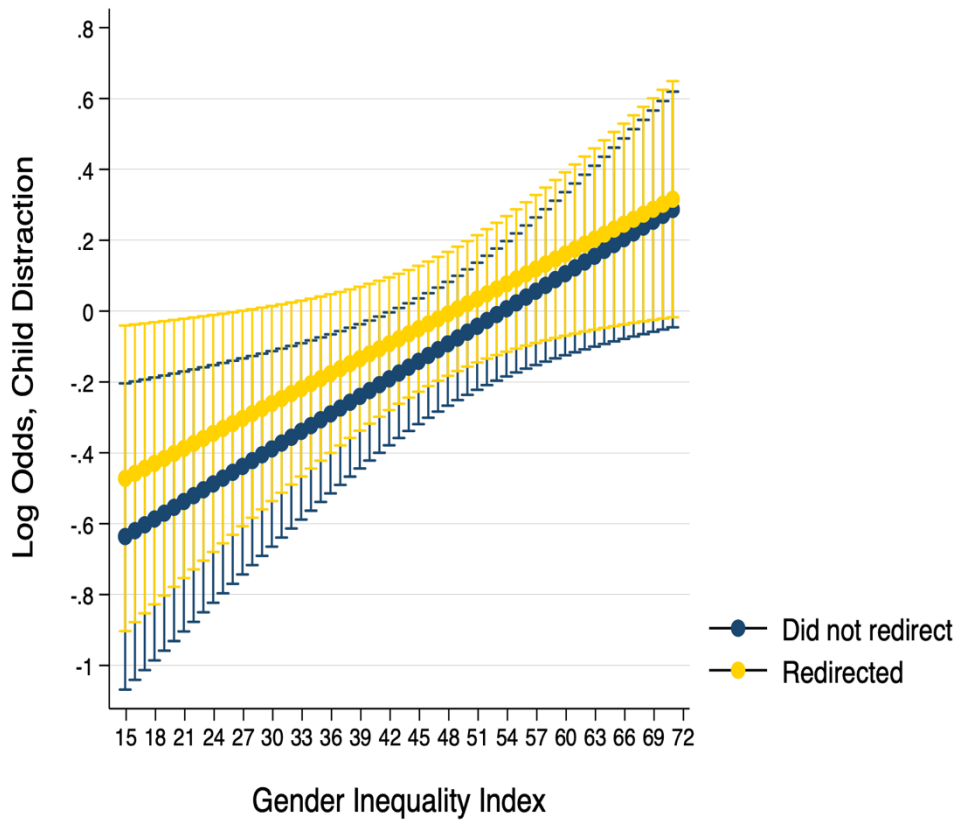
Figure 42. Interaction effect between Gender Inequality Index and redirection predicting child distraction.

Figure 43. Interaction effects between Gender Inequality Index and shouting and calling names predicting child prosocial behavior.

Figure 44. Interaction effects between Gender Inequality Index and shaking and spanking predicting child prosocial behavior.
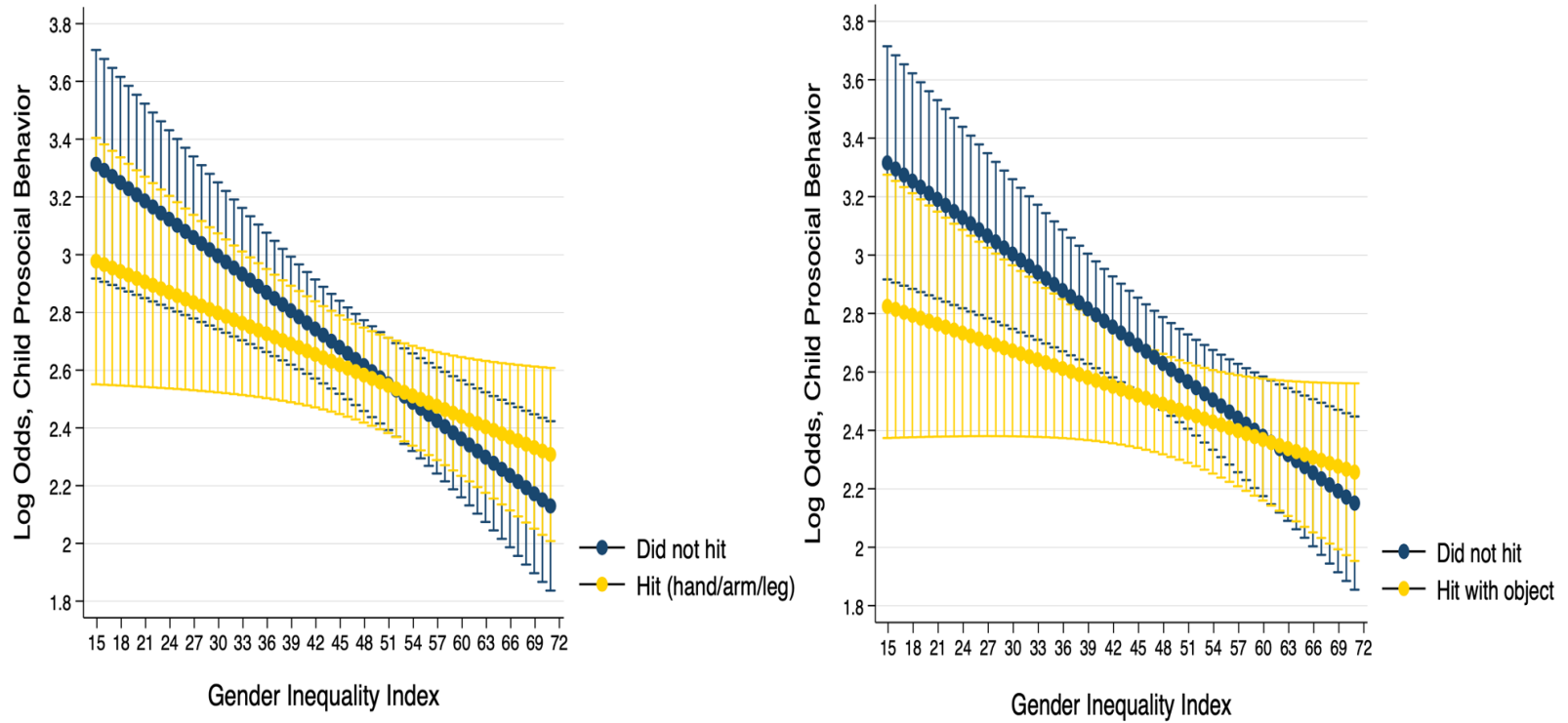
Figure 45. Interaction effects between Gender Inequality Index and hitting on the hand, arm, or leg and hitting with an object predicting child prosocial behavior.
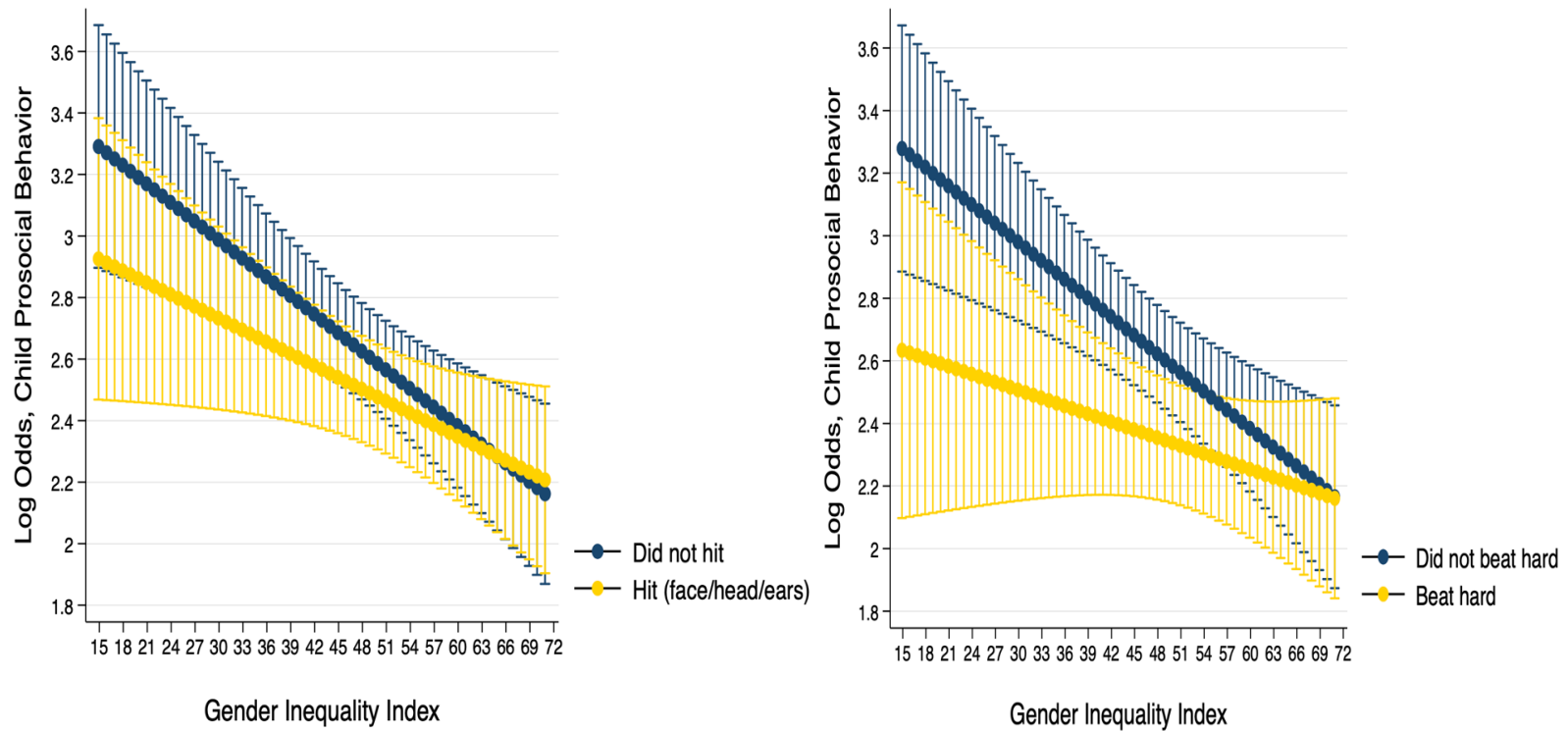
Figure 46. Interaction effects between Gender Inequality Index and hitting on the face, head, or ears and beating as hard as one could predicting child prosocial behavior.
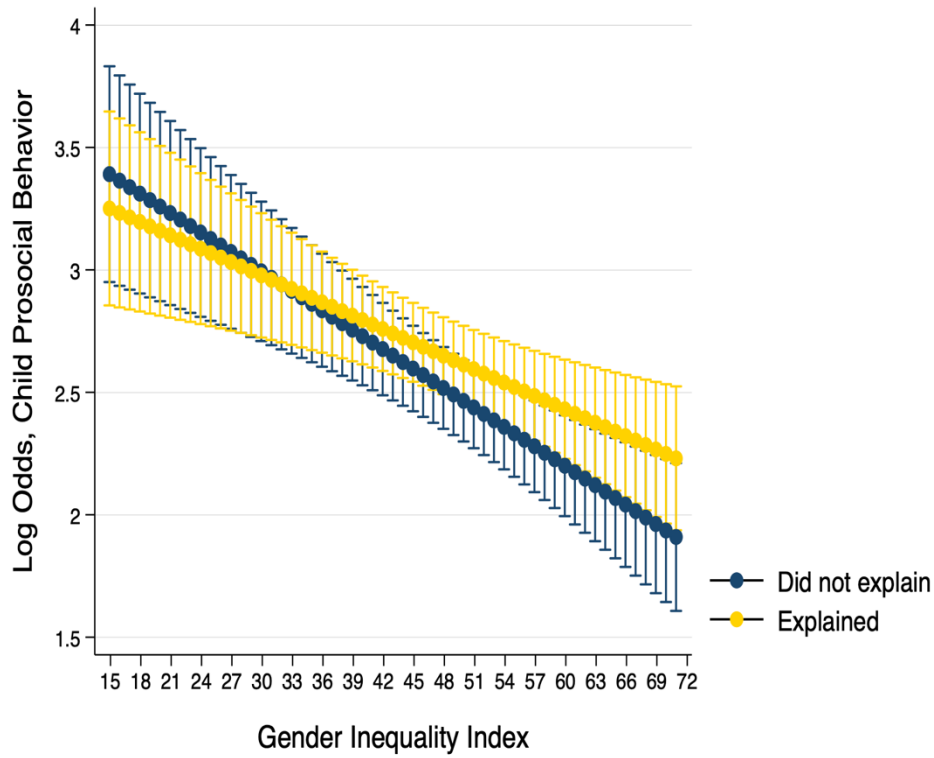
Figure 47. Interaction effects between Gender Inequality Index and verbal reasoning predicting child prosocial behavior.