Parenting Under Low Resources: Toward a General Model of Child Maltreatment

Joe Mienko

# Introduction and Background

The purpose of this manuscript is to formally specify and test a general theory of child maltreatment. The conclusion presented here is that child maltreatment is inextricably linked to household resource levels. As such, the literature tends to demonstrate a relationship between a parent's tendency to maltreat her child and the parent's relative position in the wealth distribution of a given society. Specifically, a parent on the lower end of a wealth distribution will tend to exhibit an increased probability of maltreating her child relative to parents at the higher end of a wealth distribution. The central thesis of this manuscript is that maltreatment is the normal consequence of parenting decisions made under household resource constraints. While child maltreatment may be undesirable, in most cases it is not pathological. Recognition of this basic distinction has important implications for child welfare policy and practice.

## Child Welfare Literature

The basic relationship between wealth and child maltreatment is well-established in child welfare literature with previous studies establishing links between resource constraints and substantiated allegations of child maltreatment as well as general involvement with the child welfare system (L. M. Berger & Waldfogel, 2004; Gil, 1970; Pelton, 1981, 1994; Russell & Trainor, 1984; Sedlak & Broadhurst, 1996; Stith et al., 2009). Studies examining administrative data sets of low-income populations (e.g. TANF recipients) have also shown that exogenous resource-decreasing shocks such as welfare-reform (Courtney, Dworsky, Piliavin, & Zinn, 2005) or welfare sanctions (Slack, Lee, & Berger, 2007) will tend to increase a family's probability of child welfare system involvement. Other studies have exploited experimental income support programs to address income endogeneity problems inherent in other studies and still find an inverse relationship between family income and the probability of child maltreatment (Cancian, Yang, & Slack, 2013; Fein & Lee, 2003). While there is a paucity of research examining connections between income and child maltreatment outside of the US (Cameron & Freymond, 2006), the evidence from the US seems to suggest a strong and reliable relationship between child welfare system involvement and resource constraints.

While the literature provides multiple examples of research establishing a link between resources constraints and child maltreatment, the field is lacking in attempts to formally specify a mechanism to explain this relationship. Two exceptions to this rule include (Brandon, 1999) and (Brandon, 2001). In each of these studies, microeconomic models are proposed which outline the manner in which parental resource constraints can lead to maltreatment. The former study suggests that maltreatment is mainly effected by a parent's level of altruism, the latter suggests that maltreatment is a function of how efficiently a parent uses her available resources. Both effects are hypothesized as subject to income constraints. In this manuscript, a variation on the models proposed by (Brandon, 1999) and (Brandon, 2001) is proposed followed by an attempt to test some key predictions of the model[[1]](#footnote-1). Before describing the economic components of the model, the manuscript will begin with a brief overview of theory from human ethology and neuroscience which serves as first principles for the model proposed in this manuscript.

## Human Ethology - Why do Humans Engage in Parenting Activities?

While a full review of the nature vs. nurture debate is beyond the scope of this manuscript, this analysis proceeds from an assumption that human beings are simultaneously biological *and* social beings (see for example Plomin, Owen, & McGuffin, 1994; Ridley, 2003). In other words, human beings are not born as a *tabula rasa*. Humans come pre-wired to engaged in certain activities such as learning languages, consuming nutrients, and engaging in bipedal locomotion. These activities are certainly moderated by the environment in which a human finds himself, but there is no doubt that the human genetic makeup helps people to engage in these activities regardless of environmental circumstances. Basic evolutionary theory demonstrates that such behaviors exist *because* they helped genes to evolve to their present state.

One type of behavior that enabled human genes to survive is parenting behavior and parental altruism in particular. As described in such seminal works as Hamilton (1964) and Trivers (1974), parental altruism can be defined as those behaviors requiring the investment of time or other resources in a child in a way that benefits the child (in terms of her fitness as a future mate) but comes at a cost to the parent (in terms of her fitness as a future mate). This does not preclude the parent from receiving some sort of benefit from the altruistic act. Stuebe et al. (2010), for example, find that breastfeeding decreases a mother's long term risk of developing certain chronic diseases. To the extent that an increased survival probability would allow a mother to produce more offspring, she can be viewed as benefiting from the activity to some extent. However, when considering the costs associated with breastfeeding (in terms of caloric loss, the opportunity cost of not bearing other children, etc.), there may be a net cost to the mother's long term fitness. In such situations, parental behavior is said to be altruistic.

The evolutionary explanation for such behaviors is that by engaging in such altruistic acts to her own children, a parent is increasing the survival probability of her own children and thus increasing the survival probability of her own genes (i.e. those genes that she has passed on to her child). Of course, the parent does not consciously strategize in these behaviors to increase the probability that her genes will survive. Throughout evolution, however, the genes that have survived predispose her to act altruistically. These genes survived *because* they were effective at promoting the survival of her genes.

Biology does not, however, predispose parents to act altruistically indefinitely. Under periods of extreme scarcity, animals (and humans) will reliably engage in triaging activities in which they will fail to invest in children if it appears likely that investments in that child will come at the expense of another child more likely to survive the scarcity (including future children). This point is well articulated in Chagnon (1983) where Chagnon's fieldwork revealed a Yanomamö female who killed her newborn child for the sake of her older child who was still nursing. Indeed, Daly & Wilson (1988) surveyed a database of 60 anthropological ethnographies finding that a majority of the societies engaged in infanticide. Where reasons for the infanticide were provided, almost 90 percent of the reasons were consistent with triaging activities.

Until relatively recently in human history, such activities could also be seen in Western societies. Milner (1998) cites an 1860 British newspaper article noting that it had become commonplace for London police to routinely find abandoned infants in the park or other public places. He goes on to cite another British article referring to the large-scale infanticide noting that Middlesex had become a "carnival of slaughter". While infanticide is an extreme example, human behavior tends to exist along spectra and it is reasonable to assume that many parental investment decisions exist along a continuum from optimal to infanticide. As described in more detail below, this threshold will exhibit some heterogeneity across societies. This manuscript, however, proceeds from the assumption that a threshold exists at some point along this continuum. Beyond this point, parental investment decisions can be considered to be maltreative[[2]](#footnote-2).

## Parental Decision-Making - Why do Parents Make Different Decisions in Different Circumstances?

Understanding human behavior, of course, requires a recognition of human agency - the conscious ability of humans to make decisions about how they interact with their world[[3]](#footnote-3). While the field of neuroscience is still new and has only begun to develop a model of parental decision-making (see for example Ho, Konrath, Brown, & Swain, 2014), general neuroscientific models of human decision-making provide some insight into how parents may avoid the maltreative threshold described above. Specifically, a growing body of evidence from brain-imaging studies in neuroscience suggests that humans make decisions with both automaticity (yielding the types of decisions that have allowed human genes to survive for millions of years) and as the result of more thoughtful deliberation (yielding the types of decisions that would cause a mother to avoid killing her children as the result of post-partum depression).

Greene (2014) outlines a model of this dual-process human brain in which humans are said to possess an automatic mode (primarily driven by structures such as the ventromedial prefrontal cortex) and a manual mode (primarily driven by structures such as the dorsolateral prefrontal cortex). The experimental evidence for this model is well-covered by Greene and will not repeated here. However, Greene demonstrates how a series of experimental studies show that the dual-process theory of the brain implies a dual-process theory of *morality*. The basis of Greene's theory is what he refers to as the Central Tension Principle in which "characteristically deontological judgments are preferentially supported by automatic emotional responses, while characteristically consequentialist judgments are preferentially supported by conscious reasoning and allied processes of cognitive control[(i.e. manual mode)]". In simple terms, moral decisions that require cost-benefit analysis and "thinking" (i.e. the types of decisions that would tend to lead to altruistic parental investment decisions in spite of resource constraints) require humans to engage in manual mode, deliberative thinking. Other moral decisions are made automatically.

In terms of parenting, this manuscript assumes that automatic mode tends to serve humans well most of the time. Human's have evolved to, under normal circumstances, care for their children as described above. This means that most of the time, default parental impulses will tend to avoid a Middlesex-style "carnival of slaughter". Placing a parent under resource constraints requires that the parent switch to manual-mode thinking in order to continue to make altruistic investments in their child in spite of the sorts of automatic impulses they might feel. However, recent experimental evidence gives reason to believe that switching to manual-mode thinking becomes difficult under resource constraints. Specifically, cognitive load (i.e. time pressure or a form of resource constraint) has been observed to decrease manual mode thinking in experimental subjects (Paxton, Ungar, & Greene, 2012; Suter & Hertwig, 2011). Other recent research by Mani, Mullainathan, Shafir, & Zhao (2013) suggests that the types of cognitive load that are induced in experimental settings are also induced by reductions in income. Taken as a whole, these recent findings lead to the conclusion that relatively poor parents who are faced with choices of how to invest in their children will tend to rely more on automatic mode decision-making processes relative to wealthier parents. Under extremely low levels of resources, parents can reasonably be expected to have a higher probability of engaging in maltreative behaviors.

## State Decision-Making - Why do State's Intervene in Family Lives?

Since the 19th century, Western society and most of the world has evolved into a series of social welfare states which also seek to prevent the existence of "carnival[s] of slaughter". With respect to the family, governments have come to acknowledge an implicit agreement between parents and children which consists of a fiduciary relationship between parents and children in which children are viewed as principals and parents are viewed as "...agent[s] of the child's wellbeing" (p. 57, Testa & Poertner, 2010). Under this definition, if a parent acts in her own self-interest at the expense of her children's wellbeing, a principal-agent problem can be said to exist. Moreover, because this principal-agent problem tends to lead to children who are less well-developed and less capable of full participation in society as adults (e.g. Barro, Becker, & Tomes, 1986), the problem also produces a negative externality. In other words, society is made to pay for individual parental decisions.

For the purposes of this manuscript, instances in which this contract is broken down are viewed to be instances of child maltreatment. When children are maltreated, the state is viewed to have a fiduciary obligation to both the child and to the rest of society. The state's obligation to the child is to ensure that actions are being taken to promote the child's wellbeing at or above some community standard. If the parent is unable to fulfill this role, the state is required to act *in loco parentis* or *in place of the parent* to ensure that proper investments are made in the child's human capital. In ensuring that these investments are made, the state also works to maximize social welfare for society as a whole by ensuring that externalities caused by a parent's failure to properly invest in his children are minimized.

## Proposed Theoretical Model

Based on the theory reviewed above, this manuscript will proceed from the following assumptions:

1. That under high resource levels, parental behavior has evolved to create automatic impulses which tend to yield altruistic parenting behaviors and that such behaviors will tend to maximize a child's wellbeing within available resources,
2. That when operating under moderate resource levels, parents will tend to experience tendencies to parent non-altruistically but can transition to higher-level, manual-mode forms of cognition. This form of cognition allows parents to still engage in altruistic parenting behaviors which maximize a child's wellbeing despite the moderate resource levels,
3. That when operating under low resource levels, parents will tend to experience tendencies to parent non-altruistically and will also have difficulty transitioning to higher-level, manual-mode forms of cognition. An inability to transition to higher-level, manual-mode forms of cognition under relatively low resource levels will tend to yield non-altruistic parenting behaviors which do not maximize a child's wellbeing, and
4. That when a child's cumulative wellbeing (actual or probabilistic) falls below the wellbeing threshold for a given society, the society will tend to act *in loco parentis*.

These basic assumptions are displayed graphically in Figures 1 and 2 below. Figure 1 shows probable paths of parental behaviors and child wellbeing under different levels of resources. Figure 2 graphically displays the probable outcomes of parenting under relatively low resource levels (items 3 and 4 from above).

Figure 1.

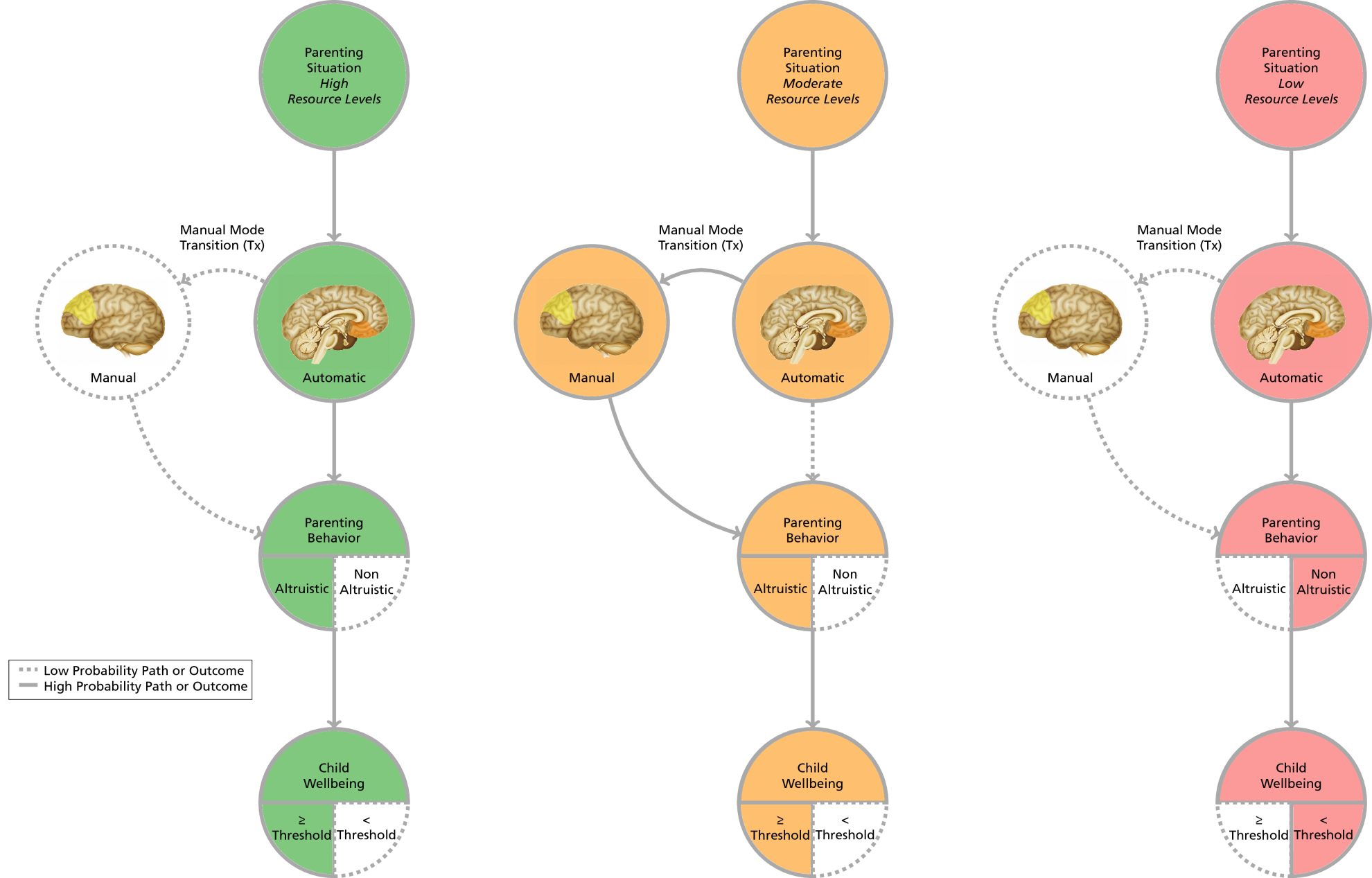
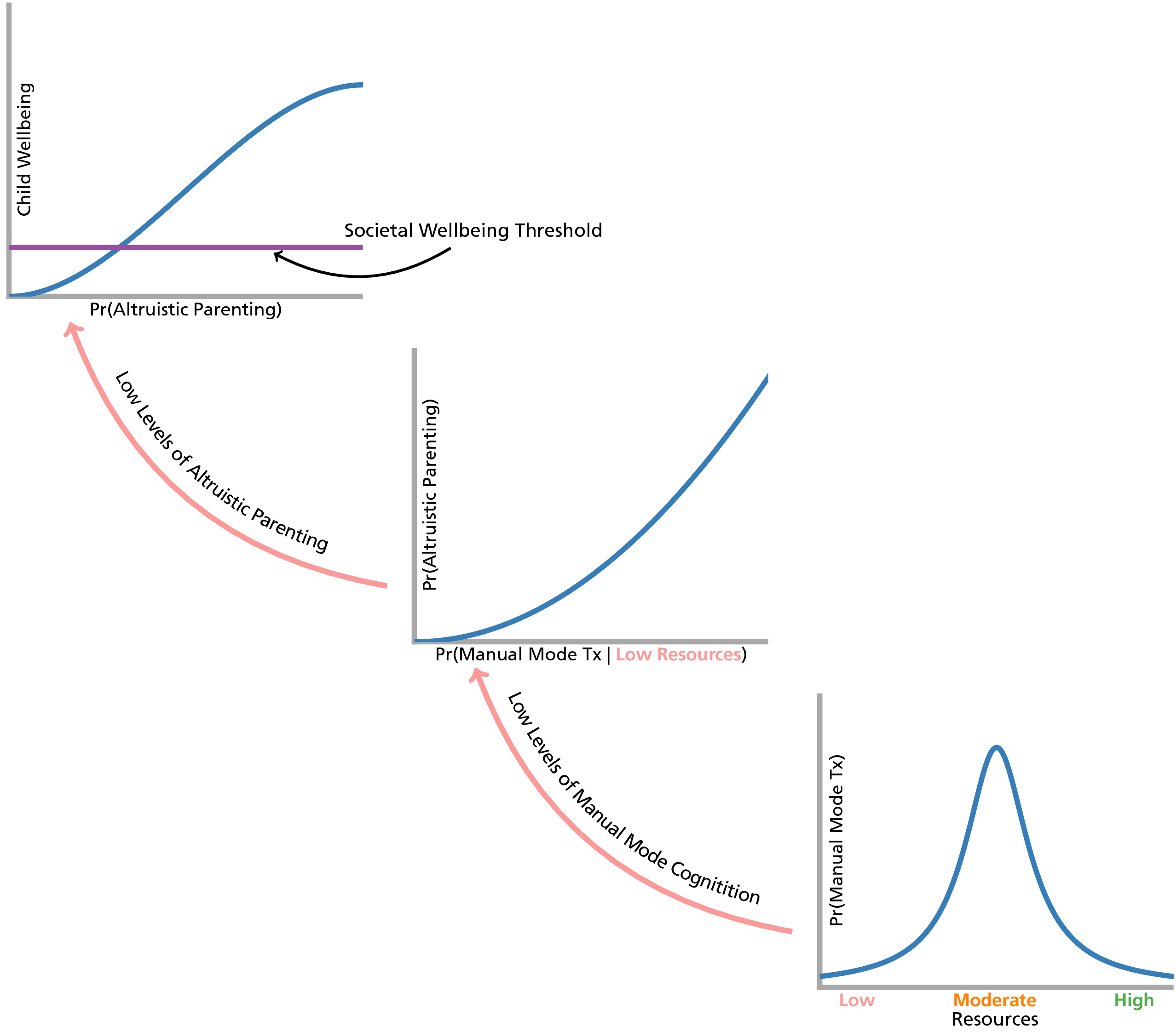


Figure 2.



While the logic of the current manuscript assumes the existence of an underlying theoretical structure similar to that in Figures 1 and 2, only two components of the above theoretical model will be specifically tested: parenting situation (i.e. resource level) and parenting behavior. Specifically, this manuscript seeks to test the relationship between parenting situation and parenting behaviors. The prediction of the model above is that, as resource levels increase, altruistic parenting behavior will also increase.

# Operational Definition of Key Constructs

## Microeconomic Background

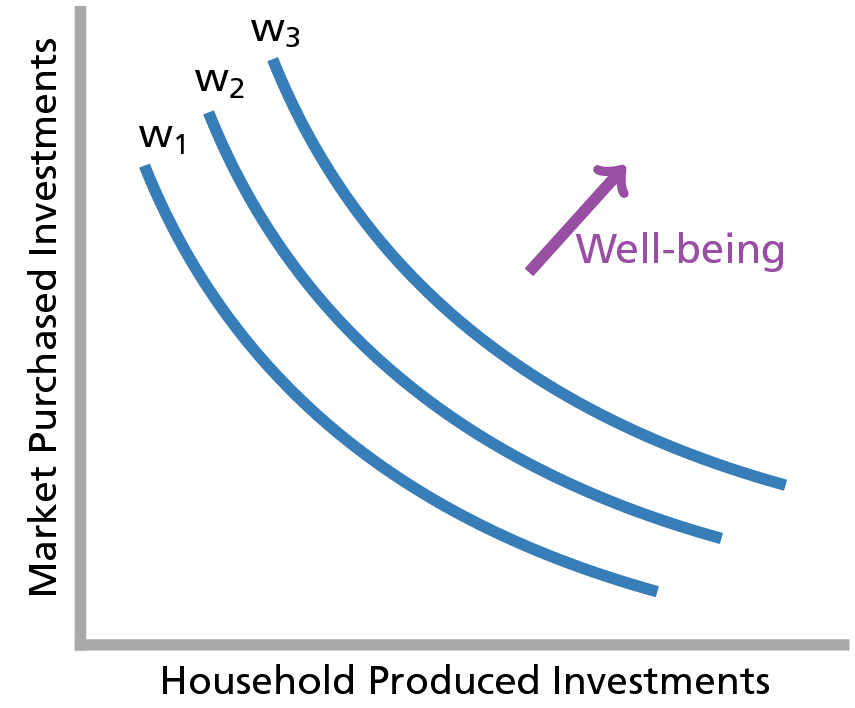
In order to test the relationship between parenting situation and parental altruism, it is first necessary to develop an operational definition of altruism for the purposes of this manuscript. This will be accomplished by relying on basic household microeconomic theory. For present purposes, an assumption is made that a particular household contains two individuals: a parent and a child[[4]](#footnote-4). A further assumption is made that the child and parent experience increases in wellbeing as a function of their consumption of household resources such as money, parenting time, etc. These resources could be shared or consumed completely by either a parent or child (see (Gorman, 1976) for a description of how private and public goods could be distributed throughout a household).

In using the term wellbeing, this manuscript draws an implicit equivalence between the term and the traditional concept of utility utilized in standard microeconomic theory[[5]](#footnote-5). In this way, this manuscript follows the line of literature started by Easterlin (1974) which acknowledges that the choices that people make are subject to the context in which an individual finds themselves and that an individual's wellbeing is derived from more than just increased consumption. This view implies that income-based measures of wellbeing should be thought of as necessary but not sufficient to the study of wellbeing (Graham, 2008). In general, this manuscript proceeds from an assumption that wellbeing can be conceptualized by what philosophers and positive psychologists would refer to as eudaimonia - a higher level of happiness (Kashdan, Biswas-Diener, & King, 2008) which can be viewed as inclusive of cognitive or hedonic forms of happiness. While this manuscript does not explicitly test a eudaimonic formulation of wellbeing in economic models, the reader should be clear that the models and theoretical assumptions presented here are, in the general case, consistent with notions of wellbeing and happiness that are more familiar to non-economists and social welfare scholars (e.g. Ryff, 1989) and that these conceptions of wellbeing do not necessarily reduce to hedonism or require strictly "rational" preferences.

Like the economic conception of utility, wellbeing can be understood as the level of satisfaction that an individual experiences as the result of consumption and other choices about how to live their lives[[6]](#footnote-6). For present purposes, two composite goods that could be consumed by a child are considered: household-produced investments (e.g. making meals, reading to the child, playing with the child, etc.) and market purchased investments for the child (e.g. childcare, etc.). The logic of this manuscript implicitly follows Brandon (2001) and assumes that a child's *total* wellbeing is comprised of household-produced investments and market purchased investments.

For illustrative purposes[[7]](#footnote-7), the contours of a child's wellbeing are shown in Figure 3 below. As in utility theory, the contours are referred to as indifference curves; a two-dimensional representation of a three-dimensional wellbeing function. A key feature of this graph is the notion of substitution. That is, as the child consumes more of one form of investment, she necessarily consumes less of the other. Movement along any one indifference curve represents a household's trade-offs of one good for another while maintaining a constant level of wellbeing. As the household produced investments in a child moves from one curve to the next (i.e. from , to , to ), the child's wellbeing is said to be increasing. The goods that comprise market purchased investments can be assumed to behave in a similar manner.

Figure 3.



## Altruism

An important point from the discussion above is that parents can invest in their child's wellbeing *or* their own wellbeing. As noted above, parental altruism can be defined as those behaviors requiring the investment of time or other resources in a child in a way that benefits the child but comes at a cost to the parent. Ethological theory defines this benefit on the basis of the parent or child's fitness as a future mate. Here, the notion of altruism is expanded to define this benefit in terms of parent or child wellbeing. In other words, parental altruism is defined as those parental behaviors or decisions requiring the investment of time or other resources in a child in a way that increases the wellbeing of the child but at a cost to parental wellbeing. As described in more detail in the forthcoming technical appendix to this manuscript, this manuscript also proceeds from the assumption that parental altruism is the proportion of household resources expended on a child.

## Maltreative Behaviors

For the purposes of this manuscript, maltreative behaviors can be defined as those behaviors that will ultimately bring a child's cumulative well-being below the societally defined threshold discussed above. The current manuscript will focus specifically on parental discipline strategies. Following the field of behavioral psychology, this manuscript distinguishes parental discipline strategies into those strategies involving the provision of a stimulus (e.g. spanking, yelling, etc.) and those involving the removal of a stimulus (e.g. time-out, removing a toy, etc.). The behaviorist literature classifies these strategies as Type I and Type II discipline respectively[[8]](#footnote-8). Generally speaking, Type I strategies are less-likely to promote child well-being than Type II discipline strategies. For example, Type I strategies tend to be problematic for parent-child relationships and can sometimes lead to behavioral problems for children including delinquency and aggression (Gershoff, 2002; Taylor, Manganello, Lee, & Rice, 2010) - phenomena which are assumed to be negatively associated with a child's cumulative wellbeing.

## Connecting Altruism to Maltreative Parental Behaviors

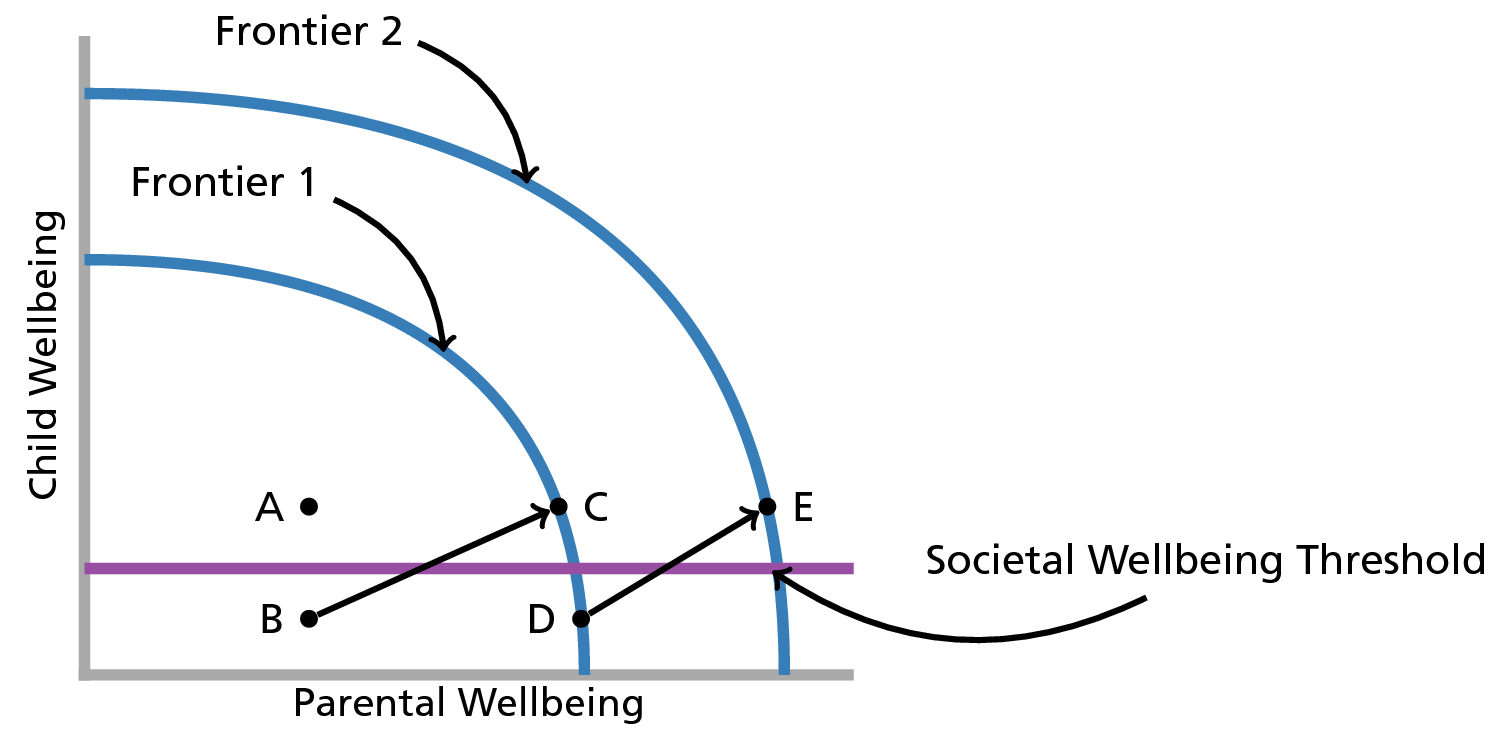
Following Brandon (2001) and Brandon (1999) and the discussion above, an assumption is made here that a given society sets a minimum wellbeing threshold. When parents invest in their children above this level, society is generally accepting of the parent. When parents invest below this level, the state must intervene to ensure a minimum level of wellbeing for the child. Figure 4 illustrates this point in terms of a wellbeing production possibility frontier. Each curve (Frontier 1 and Frontier 2) represent the possible outcomes of parental and child wellbeing that could be produced within a lower (Frontier 1) and higher (Frontier 2) level of resources.

Several points are immediately clear from this diagram. To begin, it can be seen that households operating below a given curve may not be using all available household resources. Such behavior, however, does not necessarily constitute maltreatment. This is the case of point which represents a hypothetical household which is not maximizing the potential wellbeing for the parent or for the child. However, the household is still producing above the minimal societal expectations. Sometimes, however, failing to use all available resources does cause a household to fall below societal expectations for child wellbeing. represents such a situation. By moving to point , could be brought above societal expectations within the existing resources of the household. In other words, they could stop maltreating their child without any financial assistance. Such movement might take place, for example, as the result of a drug treatment program in which a substance-abusing parent achieves sobriety and is able to spend more time with their child. Point represents a point where the parent is using all of her available resources by investing along Frontier 1 but is still investing below societal expectations. In such an instance, the state could provide a wealth transfer to the parent and, holding parental altruism constant, increase the investment in the child above societal expectations (to point ). The state could also seek to move the parent from to by trying to change household and/or parental preferences. An example of this might be the application of a parenting intervention to teach the parent new discipline strategies.

Most importantly for the current manuscript, is the notion that a given household will invest more or less in a child depending on a parent's level of altruism (this will also depend on a household sharing rule as discussed in the forthcoming technical appendix to this manuscript). This point is well articulated by consideration of points and in Figure 4. These individuals represent different combinations parental and child wellbeing in households with exact same level of resources. According to the assumptions outlined above, the difference between these two points takes place as the result of differences in altruism between the parents represented by and - Parent has a greater level of altruism than . As drawn in this figure, has such a low level of altruism that they invest in their child below the societal threshold[[9]](#footnote-9). A single investment below the threshold may or may not constitute child maltreatment. However, every investment is assumed to contribute either positively or negatively to a child's cumulative wellbeing.

As described in the previous section, the parental investment of interest for the current manuscript is parental discipline strategy. This manuscript proceeds from the assumption that, while Type II discipline strategies are more likely to maximize a child's wellbeing, they are also more resource intensive (in cognitive terms) than Type I discipline strategies and more likely to require manual mode thinking. For example, spanking a child can be reasonably thought of as a discipline strategy which stems from automatic mode thinking and requires a relatively low level of cognitive resources. A "time-out", however, can be reasonably thought of as a strategy requiring at least some manual mode thinking and, as compared to spanking, a high level of cognitive resources (e.g. monitoring the child in their state of time out, etc.). In other words, Type II discipline strategies can be reasonably thought of as more altruistic than Type I parenting strategies. As stated, the main hypothesis of this manuscript is that, as resource levels increase, altruistic parenting behavior will also increase. While prior research has reliably identified a link between Type I strategies and low levels of resources (L. M. Berger, 2007; L. M. Berger, Paxson, & Waldfogel, 2009; L. Berger, Brooks-Gunn, Paxson, & Waldfogel, 2008; Paxson & Waldfogel, 2002), in the current analysis, an independent effect of altruism while controlling for the effects of resources is expected.

Figure 4.



# Methods

## Data and Analytical Strategy

The National Survey of Early Childhood Health (NSECH) serves as the main data for this analysis. This survey involved telephone interviews with over 2,000 parents with children under 3 years of age in early 2000 (n=2,068). In addition to various demographic factors, the NSECH also collected information on the income of parents and their employment status, the time that children spend in the care of other individuals, the source of the care (childcare provider, etc.), the time that parents spend caring for their children in various activities (story-reading, etc.), and parental discipline strategies, (spanking, time-out, etc.).

A main barrier with the NSECH data is that the survey provides information on income, childcare, time-investments, and discipline strategies in ordinal scales which limits the possibility of basic mathematical operations requisite for the analysis conducted here (e.g. summing). The ordinal nature of the NSECH data is addressed by making use of other nationally representative data sets. Specifically, Bureau of Labor Statistics (BLS) data from the 2003 American Time Use Survey (ATUS) and the 2004 Consumer Expenditure Survey (CE) is utilized. Using this data to develop "prior" distributions for each measure, the following smoothing algorithm is implemented which provides a method to treat the data from these surveys as continuous:

1. Match the relevant variables from the NSECH and the relevant BLS survey,
2. Visually examine the distribution of the BLS data,
3. Calculate the MLE of a reasonable prior for the relevant variable,
4. Simulate a sampling distribution of relevant variable with a Monte Carlo function, and
5. Sample from the simulated data sets within intervals as identified in the ordinal NSECH data.

Two exceptions are made to this algorithm. The first exception is in the estimate of the total household expenditures on child care. For this measurement, CE-based estimates of the average expenditures for childcare in various childcare settings were obtained and multiplied by the total hours that NSECH respondents reported that their child spend in the corresponding settings. The variance in the hours reported in NSECH provides a continuous measurement of this expenditure without the need to incorporate the variance of a CE-based ``prior''. Also, in estimating a continuous measurement of income, a distribution as reported in a working paper by Bandourian, McDonald, & Turley (2002) is utilized which provides a reasonable prior distribution for US income.

Further details of the data preparation strategy (and subsequent steps in the analysis) are available in a [GitHub repository](https://github.com/mienkoja/qualpaper) and will also be included in the forthcoming technical appendix to this manuscript.

## Descriptions of Key Variables

### Household Income

Income in the public-use NSECH data is reported in terms of total household income on an 8-point Likert scale starting at 7,500 and proceeding in increments of 10,000 to 75,000. Continuous income is calculated using the algorithm specified above. As income is reported as "total household income", depending on the use, the estimated continuous value is divided by the number of adults in the household in order to arrive at an estimate of individual wages for parents who report some employment.

### Altruism (i.e. Household Resources Devoted to Child Well-Being)

Given the assumptions described above and in the forthcoming forthcoming technical appendix, the total household resources devoted to the child can be thought of as a measurement of "household altruism" toward the child. In order to calculate altruism, the following steps are followed:

1. Taking the estimate of household income calculated above, the count of adults in the home, and the estimated number of work hours, parent's wage is estimated as income, divided by the count of adults, divided by 365.25, multiplied by the respondents estimated number of work hours. For non-working mothers, time is valued based on the estimated market rate for childcare calculated from the CE.
2. Altruism is then calculated by summing the total time value that a parent spends on home-based child care and the time value of market child care. This sum is then divided by the time value of the total number of hours per year (i.e. parent's wage from step 1 multiplied by 365.25 days in a year multiplied by 24 hours in a day).

### Probability of All Type II Discipline

In order to obtain a single indicator of a parent's propensity to engage in Type II discipline strategies, survey information concerning the discipline strategies of the parent is used. Specifically, for each person, the probability that *all* of their reported discipline strategies would be Type II is calculated.

Parents in the NSECH were asked 5 questions regarding their discipline strategies. The specific question pattern is as follows:

The next questions are about discipline. Parents vary a lot in how they discipline and children also vary in their response to being disciplined. I am going to read a list of methods of discipline parents might use with children (CHILD)'s age. For each, please tell me if you use that method often, sometimes, rarely, or never with (CHILD). First, how about raising your voice or yelling? How about spanking? How about taking away a toy or treat? How about giving a time-out, that is making (CHILD) take a break from whatever activity {he/she} is involved in? How about explaining to (CHILD) why {his/her} behavior is not appropriate.

Using this information, the probability of all type II discipline is calculated as follows:

1. In order from first to last, the first, second, and last questions are classified as Type I strategies as they are are providing a stimulus to the child. The third and fourth questions are classified as Type II strategies as they remove a stimulus from the child.
2. Each question response is then dichotomized. Questions in which a subject answered "Never"" were coded as 0 and 1 otherwise.
3. The probability of all type II discipline is calculated for each subject as the sum of dichotomized Type II responses, divided by the sum of dichotomized Type II responses plus the sum of dichotomized Type I responses.

### Additional Variables

In addition to the key variables of interest, additional variables utilized in previous NSECH research concerning discipline strategies are included in the analysis. Specifically, Regalado, Sareen, Inkelas, Wissow, & Halfon (2004) makes use of child age, maternal race, maternal age, maternal marital status, maternal education, maternal frustration levels, child health, and developmental concerns as potential risk factors in their multivariate analysis. The current analysis also makes use of the count of children in the household as an additional variable. A descriptive summary of all the identified variables is provided in the table below.

Table 1.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Min | Max | Mean | Median |
| Probability of All Type II | 0.00 | 1.00 | 0.47 | 0.50 |
| Altruism | 0.02 | 1.00 | 0.28 | 0.25 |
| Efficiency | 0.17 | 0.92 | 0.67 | 0.70 |
| Income | 132.11 | 186747.69 | 36412.74 | 26111.33 |
| Child Count | 1.00 | 4.00 | 2.18 | 2.00 |
| Child Age (mos) | 19.00 | 35.00 | 26.62 | 27.00 |
| White Mother | 0.00 | 1.00 | 0.54 | 1.00 |
| Maternal Age | 17.00 | 49.00 | 29.26 | 29.00 |
| Married Mother | 0.00 | 1.00 | 0.63 | 1.00 |
| Maternal College | 0.00 | 1.00 | 0.48 | 0.00 |
| Maternal Frustration | 0.00 | 1.00 | 0.54 | 1.00 |
| Child Healthy | 0.00 | 1.00 | 0.81 | 1.00 |
| Devolpmental Concerns | 0.00 | 1.00 | 0.79 | 1.00 |

## Statistical Analysis

All of the identified covariates were subjected to Bayesian Model Averaging (BMA) across generalized linear models (GLMs) to determine the most probable set of covariates. The details of BMA are beyond the scope of this manuscript. The reader is directed, however, to J. A. Hoeting, Madigan, Raftery, & Volinsky (1999) for a discussion of the overall approach. Briefly, BMA is a process through which a researcher identifies a set of potential covariates and a candidate statistical model (e.g. a quasibinomial generalized linear model (GLM)). The analyst then estimates the statistical model for every possible combination of models ( models). Each model receives a weighting based on the posterior probability of the model beginning with a prior probability which represents the researcher's beliefs prior to conducting the analysis. For the current problem, the analysis utilizes a relatively conservative uniform prior. A quasibinomial GLM is chosen for the BMA to account for overdispersion in the Probability of all Type II Discipline. The BMA is implemented via the R BMA package authored by A. Raftery, Hoeting, Volinsky, Painter, & Yeung (2009).

# Results

The results of the BMA indicate that the "most probable" of the fitted models is a model which only includes Altruism and Income. Specifically, this model has a posterior probability of 0.472 and the next most-probable model has a posterior probability of 0.16. The estimates for the chosen model are displayed in the table below. All parameters are statistically significant at the 0.0001 level. As can be seen, the probability of choosing all Type II strategies positively and significantly associated with altruism and income. The results are displayed graphically in the figures below.

Table 2.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Estimate | Std. Error | t value |
| Intercept | -0.9869 | 0.2156 | -4.5777 |
| Altruism | 0.4488 | 0.1115 | 4.0234 |
| Income | 0.0807 | 0.0201 | 4.0241 |
| Figure 5. |  |  |  |

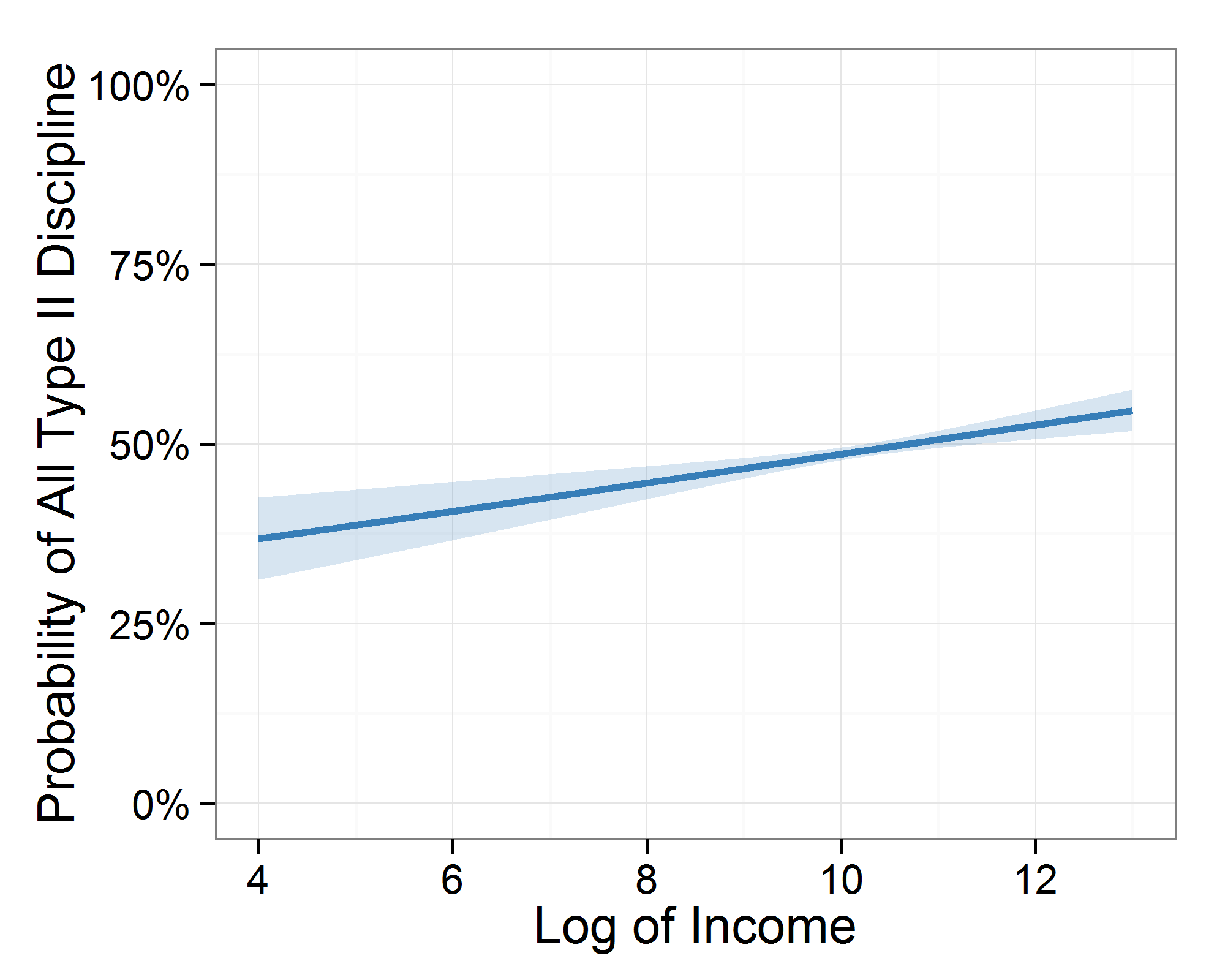
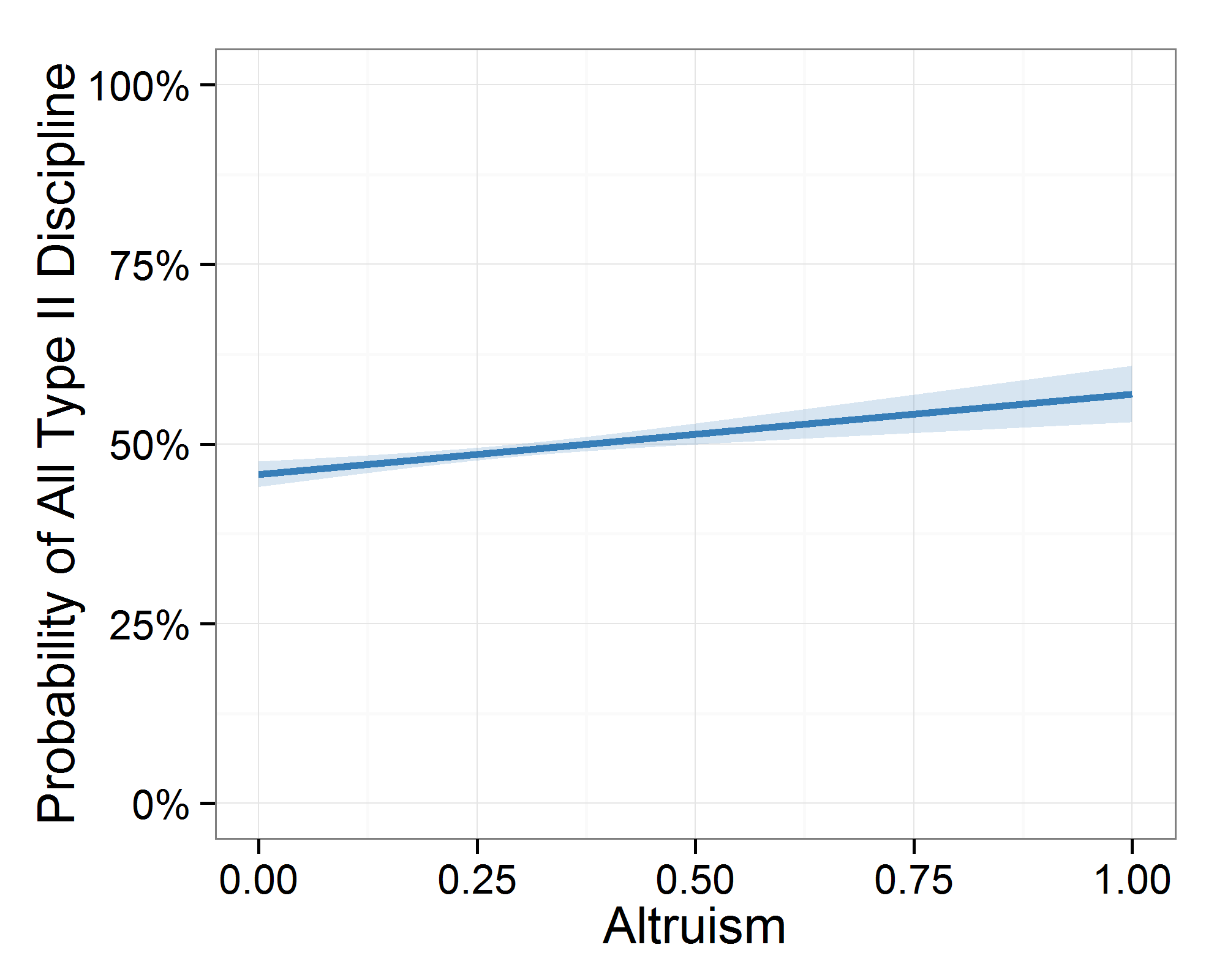


Figure 5.



# Discussion

The results of the analysis presented above confirm the hypothesis of an independent effect of altruism on Type II discipline strategies while controlling for the effects of resources. To the extent that the other assumptions of the theoretical model hold, the results of this analysis suggest that relatively simple models of human behavior might be able to explain how families become involved with the child welfare system. Similarly, from a practice perspective, the results of this analysis suggest that some families may be helped more by increases in income or other concrete resources than the sorts of psychotherapeutic interventions which tend to be prevalent in child welfare service plans. For those parents where income is not a concern, this model would suggest that interventions should focus on changing the preferences (i.e. caring and sharing) of parents and households.

What should be clear to the reader at this point is that the model developed and tested in this manuscript is implicitly defining child maltreatment as a problem of poverty. While previous researchers have certainly drawn the connection between child welfare and poverty, such literature usually attempts to examine the link between poverty and deviant parental behaviors. Here, an alternative approach is taken in defining maltreatment based on the manner in which poverty effects a given child (in terms of their well-being) and the biological and social context from which the parental behaviors emanate (resource constraints and level of parental altruism).

In defining maltreatment in this manner, this manuscript breaks from established lines of thinking about child maltreatment. Indeed, many statutes specifically preclude poverty and homelessness as factors to be considered when making legal determinations as to whether or not a given child has been maltreated. While it is understandable that policy makers would not want to hold a parent accountable for factors outside of their control, focusing exclusively on parental behaviors ignores the experience of a child in a given household and the causes of these behaviors. The model presented here also elucidates the dynamic nature of households and the variety of potential intervention points available to the child welfare social work community.

# Conclusion and Future Directions

Despite the usefulness of the model, it does suffer from an implicit assumption of a parent who desires to invest (at least some) resources in their child. The model presented here would suggest that all parents would have a propensity to harm their children under a certain mix of genetics and resource constraints, but that they typically seek to make investments in children which maximize the child's wellbeing. However, some parents suffer from various forms of psychopathology which may yield a desire to harm children under any circumstances. Instances of pedophilic sadism seem to be evidence that such individuals do exist. For those individuals, a model of maltreatment focused on the Kempe, Silverman, Steele, & Droegmuellar (1962) "defect of character" seems more appropriate than the one presented here. The point of this manuscript, however, is that there is no reason to believe that such individuals are a normal part of society or even a normal part of the Western child welfare system. Such individuals likely represent the margins of both populations and policies and interventions should be developed with this theoretical framework in mind.

The analysis presented here is consistent with a resource constraint theory of child maltreatment. However, the available data did not allow for a direct test of all aspects of the model. A direct test of the model would require information on how much parents prefer one form of discipline to another given the relative monetary or cognitive "costs" or "benefits" of a given strategy and how these preferences vary as a function of resource constraints. Specifically, future research could explore the line of experiments conducted by Greene (2014). One could, for example, imagine an brain-imaging experiment in which parent-subjects were placed under cognitive load and asked to make decisions about various parenting strategies. Understanding how parenting decisions are made within the dual-process theory of morality (or a similar framework) seems critical to the understanding of maltreatment. Additional research could be undertaken to properly monetize various parenting strategies and specifically test the assumption that more resource intensive parenting strategies tend to increase the wellbeing of children. Finally, additional research is needed (through the direct study of social workers or other means) to understand the societal variability of the wellbeing threshold. In other words, since the model presented here proceeds from the assumption that the wellbeing threshold is societally defined, research should be conducted to help the field understand precisely how the threshold varies throughout the world; both presently and across time.

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1. Students of social welfare may initially be taken back by the use of economic models to understand the phenomenon of child maltreatment. Historically, social welfare scholars and other non-economic social scientists have tended to approach theory development as a means of organizing broad constructs or ideas to explain experimental or survey data sources. Economists, on the the other hand, have tended to view theory development as a process analogous to theory development in the physical sciences. As such, in much the same way that an astrophysicist seeks to explain the motion of the planets through mathematical equations, economists have tended to rely on a large body of established mathematical theory in order to explain interactions between humans. While the current manuscript will not rely heavily on formal mathematical theory, effort is made throughout this manuscript to demonstrate how the conclusions and major concepts of economic theory are still relevant and applicable to the current problem. [↑](#footnote-ref-1)
2. Here, the word "maltreative" is used, as an adjective describing care which is characterized by violence or neglect without regard to malice. Such an adjective is important for the framework presented in this manuscript in order to avoid categorization of behaviors by way of adjectives such as "abusive" or "neglectful" while also avoiding the inherent presence of malice in the use of an adjective such as "malicious". While other candidate adjectives exist (e.g. *laesive* from the Latin adjective *laesus* meaning injured), "maltreative" is chosen due to the relative semantic comfort that most of this manuscript's probable readership will find with this word. [↑](#footnote-ref-2)
3. To be clear, the author is explicitly agnostic about *how* humans make such decisions. The assumption is simply that they *do* make such decisions. [↑](#footnote-ref-3)
4. This is a simplifying assumption made for the purposes of this manuscript. The model proposed here, however, readily extends to multiple children and multiple parents as well as to children of varying ages and genders. [↑](#footnote-ref-4)
5. In economic terms, this manuscript assumes that wellbeing (as measured by characteristics which are observable in practice or in principle) is a positive monotonic transformation of an underlying latent utility concept . Following the notation of the forthcoming technical appendix, a further assumption is made that a person's wellbeing for two choices and is ordinally comparable such that , and that it is cardinally comparable with . [↑](#footnote-ref-5)
6. It is important to note that human wellbeing is not just a function of the items that an individual might purchase or consume; it is more generally a function of an individual's preferences and the choices that individuals make throughout their lives. Talking in terms of consumption is simply a convenient way of discussing human choices and the constraints (e.g. budgets, etc.) that people have on there choices. [↑](#footnote-ref-6)
7. These figures are for illustrative purposes only. Except where specifically noted, no functional form of the wellbeing functions proposed in this manuscript is assumed. [↑](#footnote-ref-7)
8. These strategies can be analogously classified as positive and negative punishment. This distinction is also similar to authoritarian and authoritative parenting strategies. [↑](#footnote-ref-8)
9. In addition to altruism, Brandon (2001) developed the concept of parental efficiency in various childcaring strategies. The concept of parental efficiency was tested in analysis related to this manuscript and is described in the forthcoming technical appendix to this manuscript. Efficiency, as defined in these analyses, proved to have no significant predictive power with respect to parental discipline strategies. While parental efficiency may have bearing on future analyses, substantive discussions of efficiency are excluded from this manuscript for the sake of brevity. [↑](#footnote-ref-9)