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Do Letters and Gifts from International Sponsors affect Child Outcomes? Evidence from Colombia, Ghana, and Haiti

Mai Moua
mmmoua@usfca.edu

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Mai Moua

Department of Economics
University of San Francisco
2130 Fulton St.
San Francisco, CA 94117

Thesis Submission for the Masters of Science Degree
in International and Development Economics

e-mail: *mmmoua@dons.usfca.edu*

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Abstract: Past research has found child sponsorship results in higher aspirations, mental health, and educational outcomes. In this research, I explore the extent to which these outcomes can be influenced by letters and gifts sent from the sponsor to the child. However, there is limited research on the effects of direct relationship between sponsor and child. Using 1142 sponsor letters and a 2017 survey from Compassion International, an international child sponsorship organization, we find that letters and gifts from sponsors have a statistically insignificant impact on outcomes including education, mental health, aspirations, social connectedness, nutrition, religiosity, hygiene, and views on drugs, sex, and alcohol. Although a larger sample would be able to provide more definitive conclusions, we can rule out moderate-sized effects with our current sample, an exception being that more encouraging letters appear to foster deeper spiritual outcomes.

I. Introduction

According to UNICEF, an estimated 356 million children are living in poverty and have low access to food, health, and education. Aside from being deprived of the essentials, the exposure to poverty can have psychological effects. Poverty can affect psychological well-being, especially during developmental stages of childhood, it can increase stress, anger, anxiety, and depression (Lipina and Evers, 2017; Lund et al 2011). Furthermore, the impacts of such negative events in young children may follow them to adulthood (Resnick et al., 2012). In a study done by Mani et al. (2013), adults' cognitive abilities were reduced when induced with financial thoughts. These findings are concerning and show the importance of not only reducing poverty but also searching for ways to reduce negative effects on child outcomes.

Since its first establishment in 1920, an increasingly popular type of fundraiser has shown promising results on combating negative child outcomes, called international child sponsorship organizations. A study by Glewwe et. al (2014) found that international child sponsorships largely increased educational outcomes, aspirations, and self-esteem. Wydick et al. (2013) found that child sponsorships increased years of schooling and other life outcomes. With such positive results, it is invaluable to investigate which component(s) of these types of organization is the contributing factor to improving child outcomes.

Although each international child sponsorship organization usually target and administer programs to impoverished children who have low access to food, health, and education, each organization have their own distinct values and established programs. However, a unique component of international child sponsorship organizations that is shared by most of these organizations is that donors are usually paired with a child, essentially becoming a sponsor to a specific child. This allows a relationship between the sponsor and sponsored child, as the sponsor

can receive updates, can write letters, and can send gifts indirectly to their sponsored child through the organization.

The relationship between a sponsor and sponsored child through letters and gifts may serve to increase a sponsored child's hopes and aspirations. In recent studies, a favored and supported psychological theme that can drive development is increasing aspirations. By nourishing the capacity to aspire, the poor can find resources and ways to change their situation (Appadurai, 2004). Aspirations can increase due to an individual's social surroundings (Ray, 2006) and thus, alter an individual's goals and motivations (Locke & Latham, 2002). For example, Macours & Vakis (2009) found that individuals who had social interactions with successful nearby leaders led to higher aspirations which may have contributed to the attitude and behavior changes observed in their study.

Encouraging communication is argued to be critical for development and growth (Adler, 1956). Wong (2015) defines encouragement as "the expression of affirmation through language or other symbolic representations to instill courage, perseverance, confidence, inspiration, or hope in a person(s) within the context of addressing a challenging situation or realizing a potential." Encouragement is a type of emotional support that is influential in developing hope and increasing motivation (McDermott & Hastings, 2000; Wong, 2015). Therefore, meaningful sponsor letters may provide a sort of support or catalyst that benefits a child's outcomes. And as these organizations target impoverished children, it can be assumed that sponsors would write positive, supportive, and encouraging letters considering their sponsored child's situation.

On top of sponsor letters, a way to reinforce sponsor effects can be sponsor gifts. These gifts can be viewed as a cash transfer and cash transfers have been shown to be beneficial in many ways. For instance, it can reduce stress, increase life satisfaction, and reduce depressive symptoms (Haushofer, 2016; Kilburn, 2015). It has also been shown to improve household relationships,

self-esteem, as well as reduced social isolation (Samuels & Stavropoulou, 2016). A critique of cash transfers is that the positive effects will diminish after the transfer ends. However, Blattman et al (2017) found that when a cash transfer followed a therapy program, the positive effects persisted.

This paper investigates the impact of sponsor letters and sponsor gifts on child outcomes using ~16 years of sponsor letters and gifts data along with a 2017 survey done by Compassion International. The sponsor letter data provides 1115 observations on the quantity of letters received per child and 3187 letter observations where the first 300 characters of each letter has been recorded. Using the 300-character recorded letters observations, we use a textual analysis program called NRC Word-Emotion Association Lexicon (Emolex) to create an encouragement score to score the quality of each letter. The sponsor gift data provides data on the quantity of gifts and the gift amounts received per child. To find the quality of the gift, we use the average gift value a child received. The 2017 survey also included many outcome variables which we constructed into 8 child outcomes indices: education outcomes, aspirations, mental health, hygiene, nutrition, social connectedness, drugs/sex/alcohol views, and religious/spiritual. We then use an Ordinary Least Squares (OLS) model to see if the quantity and quality of letters and gifts impact the 8 child outcomes.

We find that overall, neither the quantity nor the quality of letters and gifts impact child outcomes, except for a positive relationship between the quality of a letter and the religious/spiritual index. Most of the results were null and close to zero, with small standard errors. These results allows us to rule out moderate effect sizes for virtually all our outcome variables. From the results, we can rule out effects from 10 additional letters of greater than 0.036σ on education outcomes, 0.025σ on aspirations, and 0.032σ on mental health. Similarly for

gifts, we can rule out effects from 10 additional gifts (median = US $24.60) of greater than 0.062σ on education outcomes, 0.14σ on aspirations, and 0.19σ on mental health.

II. Background & Data

2.1 Compassion International data

International child sponsorship organizations fundraise monthly donations to provide benefits to impoverished children in developing countries. Each organization usually provides information on their distinct values, how their programs work to benefit children, and how the donations received are allocated. Those that participate in these organizations are called sponsors because they are paired with a sponsored child. However, their monthly donation is usually pooled to provide programs that benefits education, health, and food for children in poverty. Although each organization may vary on how the monthly donation is allocated, they are mostly divided between administration costs, programs, and fundraising.

Compassion International is a Christian international child sponsorship organization established in 1952, currently sponsoring over 1.9 million children through partnerships with local churches in 25 impoverished countries. Compassion International is a child-first organization directly focusing on each child's development holistically rather than through indirect benefits. They encourage sponsors to write letters, either through paper or electronically, which will help deepen and build a relationship with their sponsored children.

2.2 Data

The Compassion International letter and gift dataset contains observations on 1498 children living in Ghana, Haiti, and Colombia. The data includes the number of letters a child received, the number of gifts a child received, the first 300 characters of each letter received, and the gift amount a child received from 2003 to mid-2020. Of the 1498 children, 1179 children

received gifts and 1,396 received letters. To avoid omitted variable bias, we find it important that both letters and gifts are included for our later estimates. Therefore, only the observations where children received both letters and gifts are retained. Additionally, we drop 5 extreme outliers and are left with 1142 observations. From these remaining observations, we find the average child received ~18 letters during this time, ranging anywhere from one letter to 101 letters. There are only 533 children that have one or more letters where the first 300 characters were recorded, totaling 3187 recorded letter observations. The average number of gifts received is ~9, ranging from 1 to 47 gifts and the average gift amount received by a child is US $319, ranging from US $10 to $3733.

Compassion International conducts surveys from time to time that contain education, psychological, and other information about the sponsored children. We use the latest survey conducted in 2017 to construct our 8 child outcomes for all three countries. We also use the following control variables from the survey: current age when the survey was taken, the gender, the birth order of the child, whether the child lives in an urban area, whether the child has a permanent roof, whether the child lives in a single parent household, whether the mother has a professional job, whether the child has access to clean water, and country dummy variables. Two controls having missing observations: access to clean water has 26 missing observations and whether the child lives in an urban area has one missing observation. Therefore, when we include the controls in our model below, we end up with 1115 observations.

Table 1 shows descriptive statistics by country for the 8 child outcomes, 8 controls, and their above mean averages and below mean averages for both letters and gifts. For our sample, all the children are between 15 and 19 years old, averaging 17 years old in all three countries. A little more than half of the participants are female and on average, more children live in urban areas in Colombia than Ghana and Haiti. Colombia and Haiti children do not have permanent

roofs and Haiti has a much higher number of children whose mother has a professional job in comparison to Colombia and Ghana. Access to clean water is much lower in Colombia than Haiti and Ghana. We also see a difference in our 8 child outcomes across countries. Overall, however, in terms of the child outcomes and controls, the above mean and below mean differences by letters and gifts are minimal. Access to clean water for Ghana and Haiti is the only control with an above mean and below mean significant difference. Hygiene and drugs/sex/alcohol views from Ghana are the only outcomes with an above mean and below mean difference.

III. Method

3.1 Child Outcomes using Summary Indices

The 2017 Compassion International survey contained many outcomes. Since this was the case, we constructed 8 summary indices which we call our child outcomes. Indices help avoid over-testing problems and have higher statistical power than when testing on individual variables. Seven of our eight child outcomes were created using the Anderson Index method (Anderson, 2008). These seven child outcomes are education, aspirations, hygiene, nutrition, social connectedness, drugs/sex/alcohol views, and religious/spiritual.

The education outcomes index combines the child's education level, the gpa, the current grade, how often the child is late to school, and whether the child passed the literacy and numeracy test. The aspirations index combines the level of education the child would like to complete, whether the child can identify alternative careers, their job expectations, and job interests. The hygiene index combines whether they have access to clean water, whether soap is available when washing hands, whether the child has nutritional knowledge, and the number of days missed from school due to illness. The nutrition index is constructed by combining the number of meals a child normally has, how many meals the child had yesterday, and whether the child can decide what they can eat daily. The social connectedness index combines whether the

child has an adult in their life that they can confide in, whether the child has a friend they can confide in, the number of friends the child has, and the time the child spends serving the community. The drugs/sex/alcohol views index is constructed by combining the child's view of a person who is over 18 years old and consumes a certain number of alcoholic beverages, the child's view on permission to have sex, and the child's view on a person who is over 18 years old and does drugs regularly. The religious/spiritual index is constructed by combining whether a child actively evangelizes, whether the child believes in God, whether the child attends church regularly, whether the child is a disciple to others, whether the child owns a bible, whether the child prays alone, whether the child reads the bible daily, whether the child serves the church, whether the child serves the community, and whether the child studies the bible in a group.

The last child outcome is the mental health index, and it is constructed using the Principal Component Analysis method (PCA), as it is a common psychometric tool. PCA reduces the dimensionality of the data, by transforming the correlated variables to reduced orthogonal variables, ultimately extracting the principal information (Abdi & Williams, 2010). The mental health index is constructed by combining how many friends the child has, how often the child felt lonely, how often the child felt so worried that they could not eat or sleep or could not stay focused, whether the child experiences psychological aggression, and whether the child experiences violent punishment.

3.2 Quality of Letters using Textual Analysis

We use a textual analysis application to find an encouragement score of the 3187 300-character recorded letters that are associated to the 533 children. We specifically use the NRC Emotion Association Lexicon (Emolex) which creates an association score of either zero when the word is not associated or a one when a word is associated with the following 8 types of emotions: anger, anticipation, disgust, fear, joy, sadness, surprise, and trust (Mohammad &

Turney, 2013). On top of that, Emolex also identifies whether a word has a positive or negative sentiment. We find that over 90% of the letters have positive sentiments and less than 1% have negative sentiments. Joy, anticipation, and trust are the emotions with the most associations, which supports our hypothesis earlier that the letters would be positive and encouraging (see **Figure 1**). We can support this further by investigating the quality of each letter. We create the letter quality treatment variable by constructing a standardized "encouragement score" that consists of the Emolex scores for anticipation, joy, and trust. The score ranges from -2.58 to 4.03, see **Figure 2** for a low score and a high score example. Note that a low scoring letter is not negative perse, but in comparison to a high scoring letter, its encouraging quality may be lower.

3.3 Empirical Strategy

To determine the impact of our treatment effects, the number of letters and number of gifts have on child outcomes, we first scale our number of letters and number of gifts to ten. This is because the effect of one letter or one gift is so minimal, that the effect of one additional letter may not be easily seen. We then use an Ordinary Least-Squares (OLS) method with robust standard errors to estimate their impact on the child outcomes. To avoid omitted variable bias, our models will always include both number of letters and number of gifts:

$$Y_i = \alpha_i + \gamma L_i + \delta G_i + \beta' X_i + \epsilon_i \qquad (1)$$

where Y_i is child outcomes, L_i is the number of letters (tens), G_i is the number of gifts (tens), X_i is a vector of control variables which are listed in **Table 1** under the child outcomes, for each individual child i.

To include the impact of the quality of the letter and average gift value, equation (2) is an extension of equation (1), adding letter quality and average value of gifts. We use the natural logarithm of the average value of gifts to reduce the skewedness of the data. We lastly look at the interaction effects using Equation (3).

$$Y_i = \vartheta_i + \omega_1 L_i + \omega_2 Q_i + \theta_1 G_i + \theta_2 \ln(AvgG_i) + \beta' X_i + \epsilon_i \quad (2)$$

$$Y_i = \varphi_i + \sigma_1 L_i + \sigma_2 Q_i + \sigma_3 L_i \cdot Q_i + \tau_1 G_i + \tau_2 \ln(AvgG_i) + \tau_3 G \cdot \ln(AvgG_i) + \beta' X_i + \epsilon_i \quad (3)$$

where Y_i is child outcomes, L_i is the number of letters (tens), Q_i is the letter quality, G_i is the number of gifts (tens), $AvgG_i$ is the average gift value, and X_i is a vector of control variables which are listed in **Table 1** under the child outcomes, for individual child i.

IV. Results

4.1 Impact

In **Tables 2.1** thru **Tables 2.8**, we run four different models for our 8 child outcomes. The first model is equation (1) with no controls and the second model includes controls. We find that with or without the controls, the overall impact of the number of letters and number of gifts are null and non-significant for most of the child outcomes. We find only religious/spiritual and drugs/sex/alcohol views have a negative significant relationship for every 10 additional letters. However, these results become non-significant once the letter quality is included.

When we run the third model, equation (2), we see that the results for letter quality are also null results for all child outcomes, except for religious/spiritual. The letter quality coefficient is .096 and statistically significant at the 5% level for religious/spiritual. The positive relationship seems to indicate the importance of the quality of a letter in comparison to the number of letters. Hygiene results were significant at the 10% level for the number of letters, but the interpretation of this result is unintelligible. Lastly, the results for our fourth model using equation (3) were overall, non-significant. Again, hygiene results were significant at the 10% level for the number of letters, but results again appear contradictory, showing a positive relationship between the average gift value, but a negative relationship when 10 additional gifts are received.

4.2 Analysis of Heterogeneity using Lasso

As noted above, the overall results of the quantity and quality of letters and gifts on child outcomes seem to show minimal impact. Therefore, we look at the heterogeneity and treatment effects by interacting letters and gifts to see if they have a small to large impact in certain populations. We do this by using a machine learning method called LASSO (Tibshirani, 1996). Our treatment effects are our control variables interacted with intensive letter writing (30+ letters) and intensive gifts (US $413+). This allows us to review intensive letter writing against non-intensive letter writing in certain populations, as well as gifts. The LASSO results retained values for only three of our eight outcomes which are education, social connectedness, and religious/spiritual (see **Table 3.1** to **Table 3.3**).

For education outcomes, the selected treatment effects suggests that intensive letter writing may impact children differently if they live in an urban area or in a one parent household. Intensive gifts may also impact education outcomes differently if the child lives in an urban area, in a home with a permanent roof, in a one parent household, or the child is male. For social connectedness and religious/spiritual, the selected treatments seem to be erroneous. Overall, aside from education outcomes, we find low evidence of heterogeneous effects implying little heterogeneity in impact.

4.3 Certainty of Null Effects

As explained earlier, our results find that the treatment variables on our 8 child outcomes are null effects and tight zeros, where the coefficients are close to zero and the standard errors are quite small. As this is the case, we can rule out certain size effects. From equation (1), with 99% confidence, we can rule out effects from 10 additional letters of greater than 0.036 σ and 10 additional gifts of greater than 0.062 σ on education outcomes. For aspirations, we can rule out effects from 10 additional letters of greater than 0.025 σ and 10 additional gifts of greater than

0.14 σ. We also rule out effects from 10 additional letters of greater than 0.032 σ and 10 additional gifts of greater than 0.19 σ on mental health. This suggests that letters and gifts may have minimal or no relationship on education outcomes, aspirations, and mental health, implying that other factors may be contributing to the improved child outcomes found in previous studies.

For the remaining child outcomes, we find similar size effects. With 99% confidence, we can rule out effects from 10 additional letters of greater than 0.039 σ on hygiene, 0.034 σ on hutrition, 0.064 σ on social connectedness, and 0.009 σ on drug/sex/alcohol views. We also rule out effects from 10 additional gifts of greater than 0.16 σ on hygiene, 0.07 σ on nutrition, 0.13 σ on social connectedness, and 0.16 σ on drug/sex/alcohol views. These results again indicate that letters and gifts may have low impact on child outcomes.

IV. Conclusions

This research seeks to evaluate one component of child sponsorships, the impact of letters and gifts sent from sponsors to their sponsored children. We created 8 child outcomes and reviewed it against 1115 observations of the quantity of letters and gifts received by sponsored children. We also investigated whether the quality of the letters and gifts had any impact. We used 533 letter quality scores which we created using a textual analysis program and calculated the quality of the gift as the average gift value received by the sponsored children.

Overall, we find that letters and gifts do not impact child outcomes for international child sponsorships, except for the religious/spiritual index. A possible reason for the null results could be due to a child's aspirations window. Ray (2006) explains that aspirations are formed from an individual's reference point and their aspirations window. An aspirations window consists of ideals and accomplishments from individuals who are like oneself, making them more attainable. As sponsors are international and most likely different in socio-economic aspects, ideals, and

other areas, the child may not find their sponsor to be within their aspirations window. A separate critique is that the effect of the letters and gifts are short-term and without testing for short-term effects, we cannot measure its impact. It may also be that letter and gift effects are more of a catalyst and can only enhance an effect, but without any substance, the impact of letters and gifts eventually dissipates.

Since our results show tight zeros, we can rule out certain size effects. We find with 99% confidence that we can rule out mid-size effects from 10 additional letters on mental health, aspirations, and education outcomes at .036 σ, .025 σ, and .032 σ and above, respectively. We rule out mid-size effects from 10 additional gifts on mental health, aspirations, and education outcomes at 0.062σ, 0.14 σ, and 0.19 σ and above, respectively. These results indicate that the previous studies which showed improvement in education, aspirations, and mental health outcomes must be programmatic elements apart from the direct relationship between the sponsor and child.

We find a positive relationship between the quality of letters and the religious/spiritual index. This seems reasonable as Compassion International is a Christian organization and sponsors who choose Compassion may more likely be Christians themselves which may come across in the letters and enhance the outcome. Yet, this positive relationship may also point to the importance of quality over quantity. While textual analysis shows that the overall letters had positive sentiment, the quality of positive letters over the quantity of positive letters may be essential to creating meaningful impact. As Wong (2015) explained, for encouragement to be meaningful, it should provide communication that is positive, challenge-focused, or potential-focused.

Previous studies have shown that international child sponsorship organizations are beneficial to children. Our results indicate that the increased education, mental health, and

aspirations may not be due to the relationship between the sponsor and child. Instead, the programs that these organizations administer may play a larger role in child outcomes. Lastly, it is important to reiterate that the letter data consists of only the first 300 characters of each letter and that our sample size is small. For this reason, it may be possible that obtaining the full letter or a larger sample size may change our results. This is an initial look at this topic and further research would be needed for interpretation.

References

Abdi, Hervé, and Lynne J. Williams. "Principal component analysis." *Wiley interdisciplinary reviews: computational statistics* 2.4 (2010): 433-459.

Adler, A. (1956). The individual psychology of Alfred Adler: A systematic presentation in selections from his writings (H. L. Ansbacher & R. R. Ansbacher, Eds.). New York: Harper Torchbooks.

Appadurai, A., 2004, 'The Capacity to Aspire: Culture and the Terms of Recognition', in Rao, V. and Walton, M., (eds.) Culture and Public Action, Stanford University Press, Palo Alto, California, pp 59-84.

Anderson, Michael L. 2008. "Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects," Journal of the American Statistical Association, 103(484): 1481-1495.

Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), Encyclopedia of human behavior (Vol. 4, pp. 71-81). New York: Academic Press. (Reprinted in H. Friedman [Ed.], Encyclopedia of mental health. San Diego: Academic Press, 1998).

Blattman, Christopher, Julian C. Jamison, and Margaret Sheridan. "Reducing crime and violence: Experimental evidence from cognitive behavioral therapy in Liberia." *American Economic Review* 107.4 (2017): 1165-1206.

Benjamini, Yoav, and Yosef Hochberg. "Controlling the false discovery rate: a practical and powerful approach to multiple testing." *Journal of the Royal statistical society: series B (Methodological)* 57.1 (1995): 289-300.

Dercon, Stefan, and Abhijeet Singh. "From nutrition to aspirations and self-efficacy: Gender bias over time among children in four countries." *World Development* 45 (2013): 31-50.

Glewwe, Paul, Phillip H. Ross, and Bruce Wydick. "Developing hope: the impact of international child sponsorship on self-esteem and aspirations." (2014).

Haushofer, Johannes, and Ernst Fehr. "On the psychology of poverty." *Science* 344.6186 (2014): 862-867.

Kilburn, Kelly, et al. "Effects of a large-scale unconditional cash transfer program on mental health outcomes of young people in Kenya." *Journal of Adolescent Health* 58.2 (2016): 223-229

Kling, Jeffrey R., Jeffrey B. Liebman, and Lawrence F. Katz. "Experimental analysis of neighborhood effects." *Econometrica* 75.1 (2007): 83-119.

Lipina, Sebastián J., and Kathinka Evers. "Neuroscience of childhood poverty: Evidence of impacts and mechanisms as vehicles of dialog with ethics." *Frontiers in psychology* 8 (2017): 61.

Locke, Edwin A., and Gary P. Latham. "Building a practically useful theory of goal setting and task motivation: A 35-year odyssey." *American psychologist* 57.9 (2002): 705.

Lund, Crick, et al. "Poverty and mental disorders: breaking the cycle in low-income and middle-income countries." *The lancet* 378.9801 (2011): 1502-1514.

Lybbert, Travis J., and Bruce Wydick. "Poverty, aspirations, and the economics of hope." *Economic Development and Cultural Change* 66.4 (2018): 709-753.

Macours, Karen, and Renos Vakis. "Changing households' investments and aspirations through social interactions." *World Bank Research Working papers* 5137 (2009).

Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty impedes cognitive function. *science*, *341*(6149), 976-980.

McDermott, Diane, and Sarah Hastings. "Children: Raising future hopes." *Handbook of hope*. Academic Press, 2000. 185-199.

Mohammad, Saif M., and Peter D. Turney. "Crowdsourcing a word–emotion association lexicon." *Computational intelligence* 29.3 (2013): 436-465.

Ray, Debraj. "Aspirations, poverty, and economic change." *Understanding poverty* 1 (2006): 409-421.

"Releasing Children From Poverty in Jesus' Name." *About Us - Compassion International*, Compassion International, 22 Aug. 2019, www.compassion.com/about/about-us.htm.

Resnick, Michael D., et al. "Seizing the opportunities of adolescent health." *The Lancet* 379.9826 (2012): 1564-1567.

Samuels, Fiona, and Maria Stavropoulou. "'Being able to breathe again': The effects of cash transfer programmes on psychosocial wellbeing." *The Journal of Development Studies* 52.8 (2016): 1099-1114.

Shapiro, Jeremy. "The impact of recipient choice on aid effectiveness." *World development* 116 (2019): 137-149.

Snyder, C. Richard, et al. "The development and validation of the Children's Hope Scale." *Journal of pediatric psychology* 22.3 (1997): 399-421.

Tibshirani, Robert. "Regression shrinkage and selection via the lasso." *Journal of the Royal Statistical Society: Series B (Methodological)* 58.1 (1996): 267-288.

United Nations Children's Fund and World Bank, *"Ending Extreme Poverty: A Focus on Children."* New York. October 2016. www.unicef.org/publications/files/Ending_Extreme_Poverty_A_Focus_On_Children_Oct_2016.pdf

Valle, Michael F., E. Scott Huebner, and Shannon M. Suldo. "An analysis of hope as a psychological strength." *Journal of school psychology* 44.5 (2006): 393-406.

Wong, Y. Joel. "The psychology of encouragement: Theory, research, and applications." *The Counseling Psychologist* 43.2 (2015): 178-216.

Wydick, Bruce, Paul Glewwe, and Laine Rutledge. "Does international child sponsorship work? A six-country study of impacts on adult life outcomes." *Journal of Political Economy* 121.2 (2013): 393-436.

Appendix

Table 1: Descriptive Statistics by Country

				Letters			Gifts		
HA	N	Mean	Standard Error	Average Below Mean	Average Above Mean	P-Value	Average Below Mean	Average Above Mean	P-Value
Education Outcomes	367	-0.194	0.798	-0.183	-0.209	0.764	-0.205	-0.183	0.792
Aspirations	367	0.285	0.96	0.278	0.297	0.853	0.333	0.245	0.388
Mental Health	367	-0.221	1.063	-0.188	-0.274	0.453	-0.216	-0.225	0.94
Hygiene	367	0.296	1.071	0.257	0.36	0.373	0.285	0.305	0.853
Nutrition	367	-0.582	0.807	-0.605	-0.545	0.487	-0.622	-0.549	0.397
Social Connectedness	367	-0.034	1.033	-0.087	0.052	0.209	-0.013	-0.051	0.728
Drug/Sex/Alcohol Views	367	-0.925	1.055	-0.886	-0.989	0.361	-0.991	-0.871	0.281
Religious Spiritual	367	0.295	0.842	0.331	0.239	0.312	0.303	0.289	0.877
Child Order	366	2.768	1.489	2.77	2.764	0.972	2.608	2.9	0.062
Age	367	17.106	0.936	17.128	17.072	0.577	17.174	17.05	0.203
Male	367	0.534	0.5	0.52	0.557	0.487	0.53	0.537	0.891
Urban	366	0.109	0.312	0.102	0.121	0.559	0.133	0.09	0.195
Permanent Roof	367	0	0	0	0	.	0	0	.
Mother has a professional job	367	0.757	0.429	0.727	0.807	0.082	0.765	0.751	0.76
Single parent household	367	0.33	0.471	0.308	0.364	0.27	0.289	0.363	0.134
Access to clean water	366	0.874	0.332	0.85	0.914	0.07	0.874	0.875	0.966
GH									
Education Outcomes	371	-0.382	0.996	-0.343	-0.454	0.308	-0.365	-0.402	0.727
Aspirations	371	-0.339	0.891	-0.36	-0.3	0.534	-0.314	-0.37	0.54
Mental Health	371	0.15	0.969	0.141	0.168	0.801	0.09	0.222	0.192
Hygiene	371	-0.181	0.866	-0.167	-0.207	0.669	-0.298	-0.041	0.004
Nutrition	371	-0.05	0.783	-0.069	-0.014	0.519	-0.024	-0.081	0.491
Social Connectedness	371	0.14	1.042	0.135	0.149	0.896	0.162	0.114	0.657
Drug/Sex/Alcohol Views	371	0.78	0.553	0.797	0.748	0.41	0.829	0.722	0.065
Religious Spiritual	371	0.14	0.955	0.164	0.096	0.51	0.189	0.082	0.284
Child Order	371	4.113	1.486	4.191	3.969	0.171	4.149	4.071	0.618
Age	371	17.03	0.948	17.079	16.939	0.174	16.985	17.083	0.324
Male	371	0.515	0.5	0.511	0.523	0.816	0.544	0.479	0.211
Urban	371	0.536	0.499	0.506	0.593	0.114	0.505	0.574	0.185
Permanent Roof	371	0.186	0.39	0.186	0.184	0.961	0.188	0.183	0.908
Mother has a professional job	371	0.035	0.184	0.037	0.031	0.744	0.035	0.035	0.965
Single parent household	371	0.407	0.492	0.399	0.423	0.644	0.441	0.367	0.151
Access to clean water	351	0.926	0.262	0.944	0.892	0.077	0.912	0.943	0.27

CO	N	Mean	Standard Error	Letters			Gifts		
				Average Below Mean	Average Above Mean	P-Value	Average Below Mean	Average Above Mean	P-Value
Education Outcomes	404	0.601	0.943	0.627	0.558	0.48	0.64	0.568	0.446
Aspirations	404	0.054	1.002	0.051	0.06	0.923	-0.001	0.102	0.305
Mental Health	404	0.024	0.863	0.03	0.015	0.86	0.01	0.037	0.755
Hygiene	404	-0.068	0.853	-0.044	-0.107	0.471	-0.126	-0.018	0.208
Nutrition	404	0.582	1.011	0.558	0.62	0.554	0.561	0.6	0.7
Social Connectedness	404	-0.129	0.919	-0.082	-0.205	0.193	-0.13	-0.128	0.981
Drug/Sex/Alcohol Views	404	0.142	0.339	0.125	0.171	0.189	0.143	0.141	0.965
Religious Spiritual	404	-0.484	1.005	-0.445	-0.548	0.314	-0.478	-0.488	0.914
Child Order	403	2.174	1.277	2.076	2.333	0.05	2.256	2.102	0.226
Age	404	16.802	0.905	16.769	16.856	0.347	16.78	16.82	0.662
Male	404	0.475	0.5	0.506	0.425	0.114	0.513	0.443	0.155
Urban	404	0.854	0.354	0.869	0.83	0.289	0.856	0.853	0.93
Permanent Roof	404	0	0	0	0	.	0	0	.
Mother has a professional job	404	0.255	0.436	0.271	0.229	0.347	0.24	0.268	0.541
Single parent household	404	0.433	0.496	0.462	0.386	0.133	0.455	0.414	0.422
Access to clean water	399	0.243	0.429	0.267	0.204	0.153	0.227	0.257	0.487

Table 2.1 Education Outcomes Results

	(1) Education Outcomes	(2) Education Outcomes	(3) Education Outcomes	(4) Education Outcomes
Number of Letters (tens)	-0.001	-0.006	-0.005	-0.003
	(0.020)	(0.018)	(0.024)	(0.025)
Letter Quality			0.027	-0.004
			(0.043)	(0.073)
Number of Letters X Letter Quality				0.019
				(0.031)
Number of Gifts (tens)	-0.031	-0.042	-0.081	-0.344
	(0.051)	(0.046)	(0.067)	(0.383)
ln(Gift Value)			-0.089	-0.163
			(0.096)	(0.156)
Number of gifts X ln(Gift value)				0.075
				(0.108)
Obs.	1142	1115	519	519
R-squared	0.000	0.209	0.214	0.215
Controls	No	Yes	Yes	Yes

Standard errors are in parenthesis
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 2.2: Aspirations Results

	(1) Aspirations	(2) Aspirations	(3) Aspirations	(4) Aspirations
Number of Letters (tens)	-0.020	-0.020	-0.015	-0.015
	(0.020)	(0.019)	(0.023)	(0.023)
Letter Quality			0.013	-0.002
			(0.040)	(0.061)
Number of Letters X Letter Quality				0.008
				(0.025)
Number of Gifts (tens)	0.074	0.027	0.036	0.145
	(0.049)	(0.049)	(0.062)	(0.446)
ln(Gift Value)			0.046	0.077
			(0.077)	(0.151)
Number of gifts X ln(Gift value)				-0.031
				(0.120)
Obs.	1142	1115	519	519
R-squared	0.002	0.081	0.081	0.082
Controls	No	Yes	Yes	Yes

Standard errors are in parenthesis
*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Table 2.3: Mental Health

	(1) Mental Health	(2) Mental Health	(3) Mental Health	(4) Mental Health
Number of Letters (tens)	-0.018	-0.013	-0.029	-0.032
	(0.018)	(0.019)	(0.031)	(0.029)
Letter Quality			-0.043	0.057
			(0.045)	(0.068)
Number of Letters X Letter Quality				-0.058*
				(0.035)
Number of Gifts (tens)	0.045	0.065	0.074	-0.052
	(0.054)	(0.054)	(0.076)	(0.507)
ln(Gift Value)			0.030	-0.007
			(0.096)	(0.177)
Number of gifts X ln(Gift value)				0.036
				(0.141)
Obs.	1142	1115	519	519
R-squared	0.001	0.059	0.045	0.052
Controls	No	Yes	Yes	Yes

Standard errors are in parenthesis
*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Table 2.4: Hygiene

	(1) Hygiene	(2) Hygiene	(3) Hygiene	(4) Hygiene
Number of Letters (tens)	0.003	0.006	0.034*	0.030*
	(0.016)	(0.014)	(0.018)	(0.018)
Letter Quality			-0.026	-0.021
			(0.044)	(0.064)
Number of Letters X Letter Quality				-0.005
				(0.024)
Number of Gifts (tens)	0.100*	0.044	-0.013	0.828*
	(0.052)	(0.050)	(0.072)	(0.499)
ln(Gift Value)			0.049	0.286
			(0.082)	(0.177)
Number of gifts X ln(Gift value)				-0.239*
				(0.139)
Obs.	1142	1115	519	519
R-squared	0.004	0.251	0.268	0.274
Controls	No	Yes	Yes	Yes

Standard errors are in parenthesis
*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Table 2.5: Nutrition Results

	(1) Nutrition	(2) Nutrition	(3) Nutrition	(4) Nutrition
Number of Letters (tens)	-0.000	-0.004	0.006	0.007
	(0.018)	(0.016)	(0.023)	(0.023)
Letter Quality			0.002	-0.030
			(0.038)	(0.062)
Number of Letters X Letter Quality				0.019
				(0.026)
Number of Gifts (tens)	-0.059	-0.035	-0.000	0.069
	(0.050)	(0.046)	(0.065)	(0.444)
ln(Gift Value)			0.106	0.126
			(0.086)	(0.163)
Number of gifts X ln(Gift value)				-0.020
				(0.125)
Obs.	1142	1115	519	519
R-squared	0.001	0.241	0.235	0.236
Controls	No	Yes	Yes	Yes

Standard errors are in parenthesis
*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Table 2.6: Social Connectedness Results

	(1) Social Connectedness	(2) Social Connectedness	(3) Social Connectedness	(4) Social Connectedness
Number of Letters (tens)	0.013	0.019	0.033	0.032
	(0.019)	(0.019)	(0.028)	(0.029)
Letter Quality			-0.053	-0.074
			(0.042)	(0.073)
Number of Letters X Letter Quality				0.011
				(0.030)
Number of Gifts (tens)	-0.019	-0.012	0.034	0.461
	(0.058)	(0.059)	(0.091)	(0.576)
ln(Gift Value)			-0.087	0.034
			(0.099)	(0.201)
Number of gifts X ln(Gift value)				-0.122
				(0.170)
Obs.	1142	1115	519	519
R-squared	0.000	0.060	0.077	0.079
Controls	No	Yes	Yes	Yes

Standard errors are in parenthesis
*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Table 2.7: Drugs/Sex/Alcohol Views Results

	(1) Drug/Sex/ Alcohol Views	(2) Drug/Sex/ Alcohol Views	(3) Drug/Sex/A lcohol Views	(4) Drug/Sex/ Alcohol Views
Number of Letters (tens)	-0.022	-0.024*	-0.026	-0.027
	(0.018)	(0.014)	(0.019)	(0.019)
Letter Quality			-0.014	0.022
			(0.037)	(0.057)
Number of Letters X Letter Quality				-0.021
				(0.023)
Number of Gifts (tens)	-0.049	0.047	0.108	-0.002
	(0.056)	(0.046)	(0.075)	(0.329)
ln(Gift Value)			-0.092	-0.124
			(0.074)	(0.118)
Number of gifts X ln(Gift value)				0.031
				(0.093)
Obs.	1142	1115	519	519
R-squared	0.003	0.499	0.462	0.463
Controls	No	Yes	Yes	Yes

Standard errors are in parenthesis
*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Table 2.8: Religious/Spiritual Results

	(1) Religious/ Spiritual	(2) Religious/ Spiritual	(3) Religious/ Spiritual	(4) Religious/ Spiritual
Number of Letters (tens)	-0.042**	-0.039**	-0.037	-0.036
	(0.021)	(0.020)	(0.028)	(0.028)
Letter Quality			0.096**	0.119**
			(0.039)	(0.060)
Number of Letters X Letter Quality				-0.013
				(0.030)
Number of Gifts (tens)	0.025	0.021	0.041	-0.379
	(0.052)	(0.050)	(0.071)	(0.397)
ln(Gift Value)			-0.051	-0.170
			(0.076)	(0.139)
Number of gifts X ln(Gift value)				0.119
				(0.109)
Obs.	1142	1115	519	519
R-squared	0.005	0.128	0.137	0.138
Controls	No	Yes	Yes	Yes

Standard errors are in parenthesis
*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Table 3.1: Lasso Results for Education Outcomes

Estimate lasso with lambda=30.082 (lopt).

Selected		Lasso	Post-est OLS
Intensive Letters	*	-0.358	-0.527
Total Gifts	*	-0.011	-0.011
Urban	*	-0.054	-0.070
Permanent Roof	*	-0.035	-0.009
Mother has a professional job	*	-0.194	-0.202
One parent household	*	-0.103	-0.107
Child order	*	-0.017	-0.018
Age	*	0.137	0.138
Access to clean water	*	-0.003	-0.006
Male	*	-0.069	-0.048
Ghana	*	-0.288	-0.278
Colombia	*	0.710	0.715
Intensive Letters X Urban		0.084	0.135
Intensive Letters X One parent household		0.126	0.242
Intensive Gifts X Urban		0.048	0.087
Intensive Gifts X Permanent roof		-0.122	-0.266
Intensive Gifts X Mother has professional job		0.021	0.053
Intensive Gifts X One parent household		-0.026	-0.134
Intensive Gifts X Male		-0.134	-0.238

*Not penalized

Table 3.2: Lasso Results for Social Connectedness

Estimate lasso with lambda=39.013 (lopt).

Selected		Lasso	Post-est OLS
Intensive Letters	*	-0.234	-0.526
Total Gifts	*	0.007	0.009
Urban	*	0.004	0.007
Permanent Roof	*	-0.088	-0.098
Mother has a professional job	*	0.030	0.027
One parent household	*	-0.010	-0.018
Child order	*	-0.033	-0.041
Age	*	0.011	0.015
Access to clean water	*	0.103	0.065
Male	*	0.429	0.434
Ghana	*	0.243	0.245
Colombia	*	0.016	-0.018
Intense Letters X One parent household		0.086	0.226
Intense Letters X Child order		0.080	0.128
Intense Letters X Access to clean water		0.053	0.204
Intense Gifts X Urban		-0.016	-0.036
Intense Gifts X One parent household		-0.140	-0.280
Intense Gifts X Colombia		0.069	0.235

*Not penalized

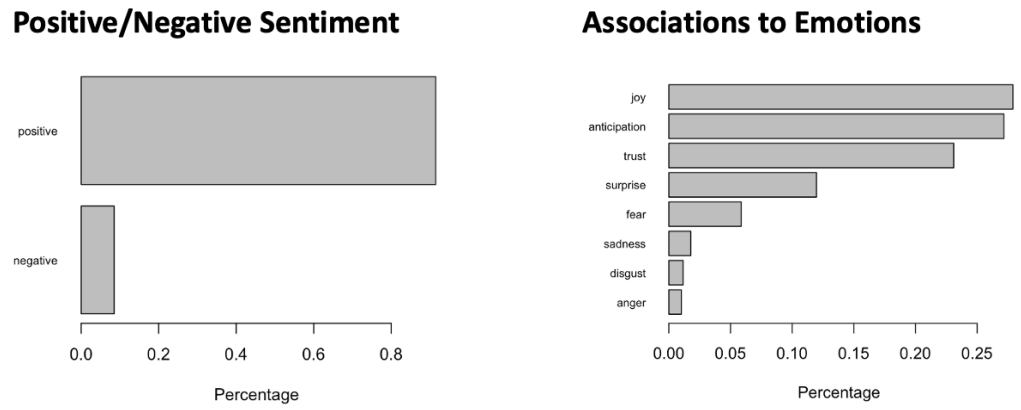
Table 3.3: Lasso Results for Religious/Spiritual

Estimate lasso with lambda=59.659 (lopt).

Selected		Lasso	Post-est OLS
Intensive Letters	*	-0.144	-0.150
Total Gifts	*	-0.006	-0.011
Urban	*	0.002	0.003
Permanent Roof	*	0.100	0.101
Mother has a professional job	*	-0.049	-0.074
One parent household	*	-0.077	-0.077
Child order	*	-0.026	-0.026
Age	*	0.020	0.020
Access to clean water	*	-0.041	-0.044
Male	*	-0.055	-0.052
Ghana	*	-0.185	-0.187
Colombia	*	-0.862	-0.890
Intense Letters X Mother has a professional job		0.130	0.256
Intense Gifts X Colombia		0.098	0.220

*Not penalized

Figure 1: Sentiment and Emotion Associations for all letters



Note: The figure on the left shows the total percent of positive and negative sentiment across for all letters. The figure on the right shows the total percent of the associations to eight emotions for all letters.

Figure 2: Example of a low and high encouragement score (standardized normal)

Score: -2.28

- Greetings Carlos, I am doing quite well. This summer my cousin and I had a summer job with Parks Canada. But now that my job is over I have had a bit more time to practice drawing on my computer. This is one of my more recent drawings These are some ch…

Score: 3.46

- Happy Birthday! We are very excited to read about how you enjoy school. Do you have a close friend who you spend time with? What will you do after you leave school? How is your family? We pray for your health and safety. We hope the political activitie…