# UC Irvine

## UC Irvine Electronic Theses and Dissertations

### Title

Adversity, Emotion Recognition, and Empathic Concern in High-Risk Youth

### Permalink

https://escholarship.org/uc/item/2c81r0t9

### Author

Dickerson, Kelli

### Publication Date

2016

Peer reviewed|Thesis/dissertation

eScholarship.org Powered by the California Digital Library
University of California

UNIVERSITY OF CALIFORNIA,
IRVINE

# Adversity, Emotion Recognition, and Empathic Concern in High-Risk Youth

THESIS

submitted in partial satisfaction of the requirements
for the degree of

MASTER OF ARTS

in Social Ecology

by

Kelli Lynn Dickerson

Thesis Committee:
Professor Jodi A. Quas, Chair
Assistant Professor Paul K. Piff
Professor Richard Matthew

2016

© 2016 Kelli Lynn Dickerson

# TABLE OF CONTENTS


| | Page |
|---|---|
| LIST OF FIGURES | iii |
| LIST OF TABLES | iv |
| ACKNOWLEDGMENTS | v |
| ABSTRACT OF THE THESIS | vi |
| INTRODUCTION | 1 |
| CHAPTER 1: Methods | 6 |
| Participants | 6 |
| Materials and Procedures | 7 |
| Coding | 9 |
| CHAPTER 2: Results | 11 |
| Preliminary Analyses | 11 |
| Emotion Recognition and Empathy | 11 |
| Adversity, Emotion Recognition, and Empathy | 13 |
| CHAPTER 3: Discussion | 15 |
| REFERENCES | 20 |
| APPENDIX A: Tables | 28 |
| APPENDIX B: Figures | 30 |

# LIST OF FIGURES


| | | Page |
|---|---|---|
| Figure 2.1 | Group Differences in Emotion Understanding | 30 |
| Figure 2.2 | Multiple Mediation Models | 31 |

# LIST OF TABLES


| | | Page |
|---|---|---|
| Table 2.1 | Demographic Characteristics | 28 |
| Table 2.2 | Mediational Models of Adversity Exposure, Sadness, and Anger, and Empathic Concern. | 29 |

# ACKNOWLEDGMENTS

I would like to express my deepest gratitude to my advisor, Dr. Jodi Quas, whose expertise, guidance, and unwavering support have made this work possible. Her commitment and enthusiasm as a researcher and mentor is truly inspiring.

I would also like to thank my committee members, Dr. Paul Piff and Dr. Richard Matthew, for their insights and encouragement throughout the development and conduction of this study and the preparation of this thesis.

Thanks to Connor Harron and Catherine Quas for their incredible assistance with data collection in Swaziland. To my team of research assistants at the University of California, Irvine, thank you for your tireless dedication to the project and your meticulous work.

In addition, I would like to thank Dr. Cindy Miller Perrin, my undergraduate research advisor, and Dr. Jennifer Skeem, my former research supervisor and current collaborator, for nurturing my curiosity and passion for psychological research. I am truly grateful for their continued mentorship and support.

Finally, I would like to thank the American Psychological Foundation, who provided the funding necessary to conduct this unique investigation.

# ABSTRACT OF THE THESIS

Adversity, Emotion Recognition, and Empathic Concern in High-Risk Youth

By

Kelli Lynn Dickerson

Master of Arts in Social Ecology

University of California, Irvine, 2016

Professor Jodi A. Quas, Chair

Little is known about how emotion recognition and empathy function in youth growing up in contexts defined by persistent adversity and challenge. The present study investigated whether exposure to chronic adversity was associated with reduced empathy in youth, and whether deficits in emotion recognition mediated this association. Foster, rural poor, and comparison youth from Swaziland, Africa (ages 11-22; $N$ = 123) responded to a series of images that depicted characters displaying positive, ambiguous, or negative expressions. Youth identified the emotions conveyed by the main character in each image and rated how concerned they felt for the character. Rural and foster youth perceived greater anger and happiness in the ambiguous and negatively valenced images relative to comparison youth. The former also perceived less sadness. Subsequent path analyses indicated that youth's perceptions of sadness in the negative and ambiguous expressions mediated the relationship between adversity exposure and empathic concern, but only for the rural youth. Findings contribute to understanding of the processes that may underlie reduced empathy in adversity-exposed youth and highlight directions for new intervention research to increase empathic tendencies.

# INTRODUCTION

In recent years, scientific, policy, and even public attention has turned toward attempting to understand how some of the most fundamental processes among humans—compassion, empathy, and concern for others-- operate in a world filled with vast poverty, desperation, and violence. These processes are core to individuals' ability to connect with one another, form close relationships, and engage with others (Decety & Svetlova, 2012), and are believed to underlie a range of prosocial and altruistic tendencies (Eisenberg, 2010). Despite considerable attention being devoted to the topic of empathic responding worldwide, questions remain about precisely how empathy functions in contexts defined by extreme adversity and challenge, particularly in childhood, a time when general emotional functioning is undergoing rapid change.

In the current investigation, we examined empathic concern in high-risk children and adolescents growing up in a small, impoverished country in the southern part of Africa, Swaziland. We had two central motivations underlying our work. We first sought to evaluate whether exposure to chronic adversity was associated with reduced empathic concern in children, and second, whether the association between adversity and empathic concern varied as a function of the youth's ability to recognize others' emotions.

Swaziland was an ideal data collection site for several reasons. The country, like many others in the region, is highly impoverished, with a vast majority of the population living in conditions of extreme poverty. Swaziland also has one of the highest rates of HIV/AIDs in the world (Central Intelligence Agency, 2014). This, along with co-occurring diseases (e.g., tuberculosis), contributes to very high rates of illnesses and deaths. In fact, the country's infant and child mortality rates are among the highest in the world, and the

average lifespan, under 50, is among the lowest (United Nations Children's Emergency Fund [UNICEF], 2010). Thus, large numbers of children are growing up with ill or deceased parents, experiences that are accompanied by uncertainty, inconsistent caregiving, parental unavailability, and considerable challenges for the children (Ansell & Young, 2004; Cluver, Gardner, & Operario, 2007; Hosegood, 2009). Finally, the ethnicity and religion of the Swazi population are largely homogenous (97% Black; 97% Catholic or Zionist), and the country has not endured any major sociopolitical, ethnic, or religious conflict for several generations. Thus, many children have been exposed to high levels of chronic adversity as reflected in poverty and family stress, but not unpredictable violence, which may affect emotional processes in ways that are different from chronic but perhaps predicable adversity (see Staub & Vollhardt, 2008).

Empathy generally refers to the tendency to share or respond to others' emotions or feelings (Eisenberg, 2000; Hoffman, 1987; Kanat-Maymon & Assor, 2010). One key, but often understudied component of empathy is emotion recognition (Decety, 2011; Feschbach, 1975; Strayer, 1987). That is, insofar as individuals vary in their perceptions of whether someone is upset or angry, individuals may subsequently vary in their empathic concern. This variability, though, may occur not only because some individuals elect not to be concerned, but also because some individuals simply did not perceive distress in the other person. On the one hand, emotion recognition emerges very early in development, and even children can accurately label and respond to emotional displays in others (Bennet & Galpert, 1992; Campos et al., 1989; Camras & Allison, 1985; Gross & Ballif, 1991). Accordingly, emotion recognition may not account for differences in empathic concern. On the other hand, however, numerous experiential factors play a role in emotion recognition

tendencies, particularly in children, and hence may have important implications for children's empathic responding.

In particular, in a largely separate literature, research has focused on how exposure to compromised home environments, such as those defined by neglect or abuse by parents, severe deprivation, or parental mental illness, affects how children interpret and respond to negative emotions, most noteworthy anger and sadness. For example, children with a history of physical abuse often recognize anger more quickly and accurately than children without such a history (Pollak & Kistler, 2002; Pollak & Sinha, 2002; Leist & Dadds, 2009). The former also, though, "recognize" or see anger in emotionally ambiguous expressions and situations (Leist & Dadds, 2009; Pollak, Cicchetti, Hornung, & Reed, 2000; Shackman et al., 2007; Sullivan et al., 2010), as do children raised in institutionalized foster care settings (Wismer Fries & Pollak, 2004). Many of these children (both maltreated and institutionalized) also, though, have deficits in recognizing sadness and at times other emotions in others (Pollak et al., 2000). Across these contexts, when caregivers are inconsistent or unavailable, children lack sufficient input to learn to recognize emotions broadly, showing heightened sensitivity to emotions that may be most critical for their daily lives, but difficulties with other emotions. Whether similar difficulties in emotion recognition would emerge among children living in other highly compromised contexts is not clear. However, if parents are ill or have died and children are being raised without consistent adult input, they may not receive sufficient cues about emotions that would promote their recognition.

Insofar as children exposed to chronic adversity fail to recognize emotions, especially sadness, or fail to accurately label situations as emotional or not, they may

report feeling less empathy when confronted with emotional displays in others. Although this possibility has not been directly investigated, some studies are suggestive of negative associations between adversity and empathy. For instance, young maltreated children are less likely than comparison children to help a peer in distress and more likely to react aggressively, behaviors that may reflect reduced empathic concern for their peer (Klimes-Dougan & Kistner, 1990; Koenig, Cichetti, & Rogosch, 2004; Main & George, 1985; Macfie et al., 1999). In more extreme environments, children formerly exposed to war-related violence (e.g., during the Yugoslavian conflict) report less empathic responding and helping (Kerestes, 2006) than demographically similar children with no such exposure. It is unclear whether these children's responses were affected by their interpretations of the emotions displayed by others, but critically important for understanding the reasons why adversity may alter empathic tendencies in children.

## Present Study

The overarching purpose of the present study was two-fold: to investigate whether exposure to chronic adversity was associated with less empathic concern in children and adolescents, and to determine whether this association was mediated by differences in their ability to recognize emotions in others. To test these possibilities, we administered a series of measures to youth in Swaziland, Africa, which assessed their recognition of both clear and ambiguous emotional expressions and their feelings of concern for the characters in those images. We predicted that youth exposed to adversity would report lower empathic concern and show reduced emotion recognition, with perhaps the exception of anger, relative to youth with no such exposure. We also expected that low emotion

recognition would mediate the relationship between adversity and youth's empathic concern.

# CHAPTER 1

# METHOD

**Participants**. One hundred twenty-three Swazi children and adolescents ("youth"), ages 11-22 (61 girls), served as participants. Approval to approach the youth was granted by the headmaster, regional chief, or head social worker, and all youth provided written assent. Two additional youth began the study but stopped part way. Inclusion criteria were that the youth were in primary or secondary school and had no obvious cognitive disability. Children were recruited from three types of environments. Two were characterized by high adversity. First, 34 youth were recruited from one of two impoverished rural villages. These "rural" youth were attending the local primary school (grades 1-7). School was not in session, but 7th graders were attending a class to prepare for their exit examination, and other youth were playing nearby at the request of the headmaster, who told them about the study and that we would be giving lunch. Second, 47 "foster" youth were recruited from two out-of-home placement locations. Bulembu (n = 33) is a small rural town that has been converted to a large, live-in orphan village. Several hundred foster children live in small two-room cottages with five same age and gender peers and one unrelated live-in female caregiver. All youth had been removed from home or elected to leave home and were invited to live in the village as a result of exposure to maltreatment, sexual assault, or lack of adults in the homestead (the process by which children were selected to come to the village is not known). Bulembu is privately funded, but the staff work closely with governmental agencies to identify youth in need of placement and to screen for appropriateness. Siblings may move to the village together but are rarely placed in the same cottage. The other out-of-home placement facility (n=14) was located in Mbanane,

the capital of Swaziland. This residential group-home for boys is run primarily by Catholic Charities in conjunction with government agencies. Girls from a nearby facility were present during the afternoons of testing and were eligible. A female caregiver, social worker, and their families lived onsite. Third, a sample of "comparison" youth (n=42) were recruited from a well-funded private primary school in the capital. The comparison youth came from a variety of locations (some rural, some urban). All families were able to provide transportation for their children to attend the school. Demographic details across the groups are presented in Table 1.

**Materials and Procedures**

Procedures were approved by the University Institutional Review Board. English is taught in schools, and testing was done in English. However, when requested, local interpreters (unknown to the youth) were present and elaborated in their native language on some questions. Measures were administered via paper (n=58, 47%) or tablet by one of three researchers. Interviews were taped. Measures relevant to the current research are described here. At the end of the youth's participation, they were thanked and fed.

***Demographic information, home, and community***. Demographic questions asked about the youth's age, year and month of birth, and grade in school. Questions about the youth's home and family concerned the number and ages of individuals in the home and their relationship to the youth, the length of time in the current home, number of rooms, whether running water was available inside, how many times a month the youth ate meat, whether the youth had a blanket or bed, and how the youth got to school (items adapted from The World Bank Child Needs Assessment Toolkit; The World Bank, 2011). Finally, yes/no questions asked about the community: whether robberies, assaults, domestic

violence, alcohol and drug use, teen pregnancy, and violence against women had occurred (items adapted from the World Bank Social Capital Assessment Tool-Community Questionnaire, 2002).

***Emotion recognition and empathic concern***. To assess emotion recognition, the youth were shown images developed for the present study depicting scenes between one to five individuals from various regions of Africa (see Fig. 1). The first and last image showed positive scenes (e.g., a family) and were included as fillers. The other images included some scenes in which individuals or groups displayed negative expressions (e.g., a sick child with an intravenous drip, an adult crying) or ambiguous expressions (e.g., two adults pushing a cart of personal items looking in the distance). The classification of images was made based largely on whether a basic emotional expression (happy, sad, angry, afraid, surprise) (Ekman, 1984) was clearly depicted. If so, the images were classified as either positive (happy) or negative (sad, angry, afraid). The other images, labeled ambiguous, did not show the main character displaying a single or clear basic or discrete expression. One additional image showed a man smiling, but he was also extremely ill with a nurse checking on him. This image was thus also classified as ambiguous. Confirmation of these classifications (i.e., that some characters were displaying clear positive or negative emotions while others were more ambiguous) also came from the comparison group's ratings. That is, for the negative images, the comparison group routinely rated these as high on one or more of the basic negative emotions, and low on the positive emotion. For the ambiguous images, their ratings across the basic emotions varied, but none was especially high or low.

The negative and ambiguous images were interspersed randomly between the positive images, which began and ended the set. The negative and ambiguous images were of critical concern in the current study, given previous findings showing that other adversity-exposed youth have difficulty or exhibit biases when interpreting negative and ambiguous stimuli (Pollak et al., 2000).

Each image was presented individually. To ensure children attended to each, they were first asked to describe what was happening. Then, the face and neck of the main character in the image was framed so that it was clearly distinguished from other information in the image. Youth were asked to look at the identified character and indicate on 3-point scales (never, a little, a lot) how angry, happy, scared, and sad they thought that character in the image was (e.g., "How sad does this person here feel?"). Finally, following Li, Li, Decety, and Lee's (2013) procedures, youth were shown a 20-point scale, with a face with a large smile (score of 1), a large frown (score of 20) or a neutral expression (score of 10) underneath. Youth were told, "Sometimes when we see others, we feel good for them, sometimes we feel bad for them, and sometimes we don't feel anything or we feel good and bad. Using this scale, point to the place that shows how you feel for the person in this box" (adapted from Li et al., 2013). After the youth chose, the next image was presented.

**Coding**

Several composite scores were calculated. First, the number of adverse experiences to which youth had been exposed in the home (e.g., not having running water in the home, one or both parents deceased) and community (e.g., drug use, violence against women) was summed and divided by the number possible to create an adversity index ($M$ = .30, $SD$ = .17).

Second, participants' ratings on the 3-point scale of how happy, sad, angry, and afraid the character felt in each image were averaged across the three types of images: positive (n = 2), ambiguous (n = 6), and negative (n=3). Finally, participants' ratings of their empathic concern, that is, how good or bad they felt for the character (on the 20-point scale), were averaged for the three types of images (Positive: $M$ = 6.70, $SD$ = 5.00; Ambiguous: $M$ = 13.76, $SD$ = 2.85; Negative: $M$ = 16.26, $SD$ = 2.85).

# CHAPTER 2

# RESULTS

## Preliminary Analyses

The preliminary comparisons across groups (comparison, foster, rural) revealed no differences in gender, $\chi^2(2, 123) = 0.74$, $p = .69$. The comparison children, were, however, younger on average than the other groups, $F(2, 120) = 14.77$, $p < .001$, $\eta_p^2 = .20$, but were also in a higher grade academically than the foster youth, $F(2,120) = 3.34$, $p = .04$, $\eta_p^2 = .05$ (Table 2.1).

Finally, with age covaried, youth in the comparison group reported far fewer negative life experiences, at home and in their community, than the foster and rural groups did, $F(2, 119) = 29.46$, $p < .001$, $\eta_p^2 = .33$, as would be expected. The rural and foster youth did not differ in their reports.

## Emotion Recognition and Empathy

First, emotion recognition tendencies across the three groups (rural, foster, comparison) were examined. Youth's mean ratings of how happy, angry, sad, and afraid they perceived the main characters as were entered into mixed-model analyses of covariance, with group as a between subject factor and discrete emotion as a within-subject measure. Age was covaried, and separate analyses were conducted for youth's ratings of the positive, ambiguous, and negative images. Significant effects, Huynh-Feldt corrections, are reported, along with follow-up simple effects and pairwise comparisons, Bonferroni adjustment, when appropriate.

For the positive images, the main effect of emotion was significant, *F* (2.18, 241.68)=10.94, $p < .001$, $\eta_p^2$ =.09. As seen in Figure 2.1.a, youth rated the main characters as being more happy than sad, angry, or fearful (the latter mean scores were all near floor). No other significant effects emerged.

The ambiguous images were of particular interest, given the potential for high variability in youth's interpretations (Tottenham et al., 2013). The emotion X age and the emotion X group interactions were significant, *F*s ≥ 3.55, *p*s ≤ .02, $\eta_p^2 s$ ≥ .03. Correlations between participants' emotion ratings and age revealed that, with increasing age, participants' ratings of how happy the main characters were decreased, *r* (115)= -.20, *p*=.04, and ratings of how angry the characters were increased *r*(115)=.32, *p* =.001. Simple effects analyses, conducted to examine the emotion X group interaction, revealed that groups differed in their ratings of happiness, sadness, and anger, *Fs* ≥ 3.18, *p*s ≤.046, $\eta_p^2$ ≥.05 (Fig 2.1.b). Foster youth perceived greater happiness in the ambiguous images' characters than comparison youth, *p* <.05. The latter, in contrast, perceived more sadness in the characters than rural youth, *p* <.05. Finally, the foster and rural youth perceived greater anger in the characters than did comparison youth, *p*s <.001.

When negative images were considered, the main effect of emotion and emotion x group interaction were significant, *Fs* ≥ 4.50, *ps* ≤ .005, $\eta_p^2$ ≥ .04 (Fig 2.1.c). Follow-up analyses revealed that all groups reported very low levels of happiness in the main characters, but the two adversity groups were not quite as low as comparison youth in their ratings, F (2,111)= 3.74, *p* = .03, $\eta_p^2 s$ =.06. Foster and rural groups also rated the main characters as more angry than the comparison group, *F* (2,111)= 7.13, *p* = .001, $\eta_p^2$ = .11.

This suggests that, to some extent, the adversity exposed groups tended toward an anger attribution bias.

Second, perceptions of empathic concern, that is how good or bad youth felt for the characters in the positive, ambiguous, and negative images, were examined across groups. Youth's mean ratings of empathic concern were entered into separate 3 (group) ANCOVAs, age covaried. Group differences emerged for the ambiguous images. Youth in the rural group, $M$ =12.75, reported feeling less bad for the main characters than youth in the comparison group, $M$=14.46, $p$ =.05, $F$ (2,111)=3.15, $p$ =.047, $\eta_p^2$ =.05. The foster children's mean fell in the middle, $M$ = 13.92.

**Adversity, Emotion Recognition, and Empathy**

A primary goal of the present study was to test empirically whether differences in youth's emotion understanding contributed to their empathetic tendencies. Based on the aforementioned findings revealing group differences primarily in perceptions of sadness and anger with the ambiguous and to some extent the negative images, only these ratings and images were considered further. Multiple mediation analyses using ordinary least squares path analysis, Hayes' PROCESS macro for SPSS (Hayes, 2013), were conducted. Groups were dummy coded. The two high-adversity groups (rural and foster) were separately compared to the comparison youth. The ambiguous and negative images were examined in separate models. Bias-corrected bootstrap confidence intervals for the indirect effects were obtained. In each model, 10,000 bootstrap resamples were collected to estimate the confidence intervals.

First, analyses concerned youth's perceptions of characters' feelings of sadness and anger in the ambiguous images in relation to their ratings of empathic concern for the

characters. Results confirmed hypotheses when comparing rural and comparison youth (Fig. 2.2.a, Table 2.2.). Relative to comparison youth, rural youth perceived less sadness in the ambiguous images, and in turn, youth who perceived less sadness reported feeling less bad for the character (once the indirect path was taken into account, the direct path revealed that group differences in empathic concern were no longer significant). Rural youth also perceived more anger, but anger was not significantly related to how youth felt toward the character. Thus, perceived sadness was a significant mediator of the relation between adversity exposure, here the rural group, and empathic concern controlling for perceptions of anger. For foster compared to comparison youth, no evidence of mediation of perceived sadness or anger emerged.

Next, analyses were repeated substituting youth's perceptions of characters' sadness and anger when shown the negative images. Results were highly similar to those for ambiguous images (Table 2.2.). Rural youth again perceived less sadness in the negative images than did comparison youth (Fig. 2.2.b), and children who perceived less sadness in the characters reported feeling less bad for them. Together, these accounted for the initial group differences in empathy. Rural youth also perceived greater anger than the comparison youth, but the association between perceived anger and empathic concern was non-significant. Models comparing foster and comparison youth were not significant when mediation was tested.

# CHAPTER 3

# DISCUSSION

The overarching goal of the present study was to assess whether exposure to chronic adversity was associated with reduced empathic concern in youth, and whether this association was mediated by variations in youth's capacity to recognize emotions in others. To test these possibilities, a unique sample of youth, many of whom had experienced significant chronic adversity, was interviewed in Swaziland, Africa. To the author's knowledge, this is the first study that has explicitly examined the links between emotion recognition and empathic concern in youth exposed to persistent adversity, and thus, provides novel insight into how these core emotional processes function in such youth.

Overall, findings from this work suggest that youth that have experienced chronic hardship show different patterns of emotion recognition relative to youth who have not. For one, adversity exposed youth perceive more intense anger in images showing negative expressions, but also in ambiguous images in which the main character's expression is not entirely clear. These data align with prior work showing heightened sensitivity to the perception of anger in youth growing up in harsh environments (Pollak et al., 2000; Scrimin et al., 2009; Wismer Fries & Pollak, 2004). This anger bias may well be adaptive in compromised contexts where vigilance toward threat is imperative (Pollak, Messner, Kistler, & Cohn, 2009), but over time, may develop into a hostile attribution bias (Shackman et al., 2007; Pollak, 2008), which may in turn increase aggression, delinquency, poor peer relationships, and anxiety and depression (Dodge & Coie, 1987; Godleski & Ostrov, 2010; Schultz et al., 2004; Nas, Orobio de Castro, & Koops, 2005; Quiggle et al.,

1992). Biases in youth's ability to recognize anger in others may therefore have critical implications for a host of behavioral and emotional problems.

Youth exposed to adversity also tended to perceive less sadness in the images depicting negative and ambiguous expressions. This reduced ability is consistent with findings of past research concerning emotion-processing tendencies in youth exposed to other types of adversity. Former child soldiers, young war and terrorism survivors, and maltreated children all exhibit similar deficits in understanding sadness in others (Pollak, 2013; Scrimin et al., 2009; Umiltá et al., 2013). Moreover, in the present study, when empathic concern was considered, these differences in youth's perceptions of characters' sadness were key. Less recognition of sadness was associated with a reduction in reported empathic concern, particularly in youth who continue to live in chronically deprived settings. This suggests that chronically deprived youth may not be less empathic than more advantaged youth per se, but rather, may have difficulties understanding the emotions of others that might subsequently provoke feelings of concern. This aligns with past theory and work that contends that perceiving distress in others, particularly sadness, is critical in motivating empathic responding, affiliation, and prosocial behavior (Batson, 2011; Eisenberg, 2010; Hendriks & Vingerhoets, 2006; Van dorn et al., 2012).

Two interesting trends also emerged that are worthy of further investigation. First, there were slight differences among groups' perceptions of happiness in the images displaying negative and ambiguous expressions. Foster and rural youth perceived greater happiness in these images than comparison youth, although of note, all ratings were fairly low. On the one hand, this finding is inconsistent with past research, which suggests that emotion biases in youth growing up in adverse contexts are specific to cues of anger, rather

than happiness or other emotions (Gibb et al., 2009; Pollak, 2003). On the other hand, this trend may offer evidence that adversity-exposed youth are more confused about emotions generally and hence reporting higher on even conflicting types of emotions. Finally, it is possible that these youth may be more likely than comparison youth to perceive positivity in negative or ambiguous expressions due to contextual or experiential differences. Nonetheless, future work should examine this pattern in greater detail to better understand the extent to which various experiences may influence youth's perception of happiness in others, as well as the implications of these perceptions for youth.

Second, there were hints that youth's perceptions of anger in others might influence empathic concern for both adversity-exposed groups. Foster and rural youth tended to perceive greater anger in ambiguous expressions relative to comparison youth and this tendency was associated with reporting greater empathic concern for the characters in these images. It is unclear why perceiving greater anger, an often outwardly hostile emotion, would affect youth's empathic concern in a positive direction. Perhaps, perceiving greater emotion (or distress) in others, regardless of its form, may provoke greater empathic feelings in youth. Future research should consider this possibility more systematically, given that it only emerged at trend levels in the present data.

As a final note, intriguing differences emerged between the two adversity groups. The rural and foster groups differed in relation to some specific emotion recognition patterns and associations among adversity. The rural youth were presently living in impoverished conditions with limited access to running water and in some cases, adequate meals and shelter; moreover, many had lost parents and family members due to HIV/AIDS or other illness, and thus faced unstable or inconsistent caregiving. The foster youth,

though originally from areas similar to the rural youth, had been selected for placement in the foster villages. Once there, the youth were cared for by live-in caregivers (who stayed with the youth for several years at a time) and social workers. The foster youth had access to schools, clothing, supplies, and reliable food and water. They were also surrounded by a set of consistently available adults who provided emotional support and guidance. Moreover, they received regular visits from foreigners, many of whom spent time with the youth and donated to the village's projects. This level of all-encompassing intervention may well alter, perhaps in positive ways, youth's feelings of empathy even if the intervention does not fully change emotion recognition tendencies. Indeed, there is evidence that interventions focused on relationship-building have benefits for youth's emotional functioning and subsequent social relationships (Denham & Burton, 1996; Soloman et al., 2000). How these and other changes in context affect youth's empathy and concern for others is a crucial area for further inquiry.

In closing, although the nature of the present design and sample meant some level of uncontrollability of settings, led to some limitations in the standardization of measures, and precluded causal inferences to be drawn, findings nonetheless offer novel insight into potential processes underlying empathy in high-risk youth and have implications for interventions aimed at increasing empathic responding in children and adolescents. What emotion youth perceive in others, which is directly related to their level of adversity, predicts the extent to which youth feel empathic concern for those others. More broadly, emotion recognition may serve as a key component to appraisal processes involved in motivated empathy (Zaki, 2014). In terms of interventions, evidence now exists that it is possible to alter, albeit in perhaps minor ways, children's interpretations of ambiguous

expressions (Penton-Voak et al., 2013), and that these alterations may affect behaviors (e.g., aggression). Whether empathic concern, and perhaps even helping or prosocial tendencies, is also affected by changes in children's recognition tendencies awaits further empirical test. Overall, this line of work has tremendous potential to enhance understanding of the processes by which people support and engage with others versus disconnect, especially in situations of challenge, in which connection and cooperation may be vital to resilience and even survival.

# REFERENCES


Ansell, N., & Young, L. (2004). Enabling households to support successful migration of AIDS orphans in Southern Africa. *AIDS Care* 16, 3–10.

Barnett, M. A. (1987). Empathy and related responses in children. In N. Eisenberg & J. Strayer (Eds.), Empathy and its development (pp. 46–102). Cambridge, England: Cambridge University Press.

Batson, C. D. (2011). *Altruism in humans*. Oxford University Press.

Bennett, M., & Galpert, L. (1992). Developmental changes in understanding the influence of emotion upon cognitive performance and motivation. *Motivation and Emotion*, 16, 103 – 115.

Bousha, D. M., & Twentyman, C. T. (1984). Mother-child interactional style in abuse, neglect, and control groups: Naturalistic observations in the home. *Child Development*, 93, 106–114.

Campos, J. J., Campos, R. G., & Barrett, K. C. (1989). Emergent themes in the study of emotional development and emotion regulation. *Developmental Psychology*, 25, 394-402.

Camras, L. A. & Allison, K. (1985). Children's understanding of emotional facial expressions and verbal labels. *Journal of Nonverbal Behavior*, 9, 84-94.

Central Intelligence Angency (2014). *Swaziland. In the World Factbook*. Retrieved from https://www.cia.gov/library/publications/the-world-factbook/rankorder/2155rank.html.

Cluver, L., Gardner, F., Operario, D. (2007). Psychological distress amongst AIDS-orphaned children in urban South Africa. *Journal of Child Psychology and Psychiatry and Allied Disciplines*. 48, 755–763.

Crittenden, P.M. (1981). Abusing, neglecting, problematic, and adequate dyads: Differentiating by patterns of interaction. *Merill-Palmer Quarterly*, 27, 1-18.

Decety, J. (2010), The neurodevelopment of empathy in humans. *Developmental Neuroscience*, 32, 257-267.

Decety, J. (2011). The neuroevolution of empathy. *Annals of the New York Academy of Sciences*, 1231, 35-45.

Decety, J., & Svetlova, M. (2012). Putting together phylogenetic and ontogenetic perspectives on empathy. *Developmental Cognitive Neuroscience*, 2, 1-24.

Denham, S. A. (2007). Dealing with feelings: How children negotiate the worlds of emotions and social relationships. *Cognition, Brain, Behavior*, 11, 1-48.

Denham, S. A., & Burton, R. (1996). A social–emotional intervention for at-risk 4-year olds. *Journal of School Psychology*, 34, 225–245.

Dodge, K.A., & Coie, J.D. (1987). Socio-information processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology*, 53, 1146-1158.

Eisenberg, N. (2000). Emotion, regulation, and moral development. *Annual Review of Psychology*, 51, 665–697.

Eisenberg, N. (2010). Empathy-related responding: Links with self-regulation, moral judgment, and moral behavior. In M. Mikulincer (Ed.), *Prosocial motives, emotions,*

*and behaviors: The better angels of our nature* (pp. 129-148). Washington, DC: American Psychological Association.

Ekman, P. (1984). Expression and the nature of emotion. In K.R. Scherer & P. Ekman (Eds.) *Approaches to Emotion* (pp 319-343). Hillsdale, New Jersey: Erlbaum.

Feshbach, N. D. (1975). Empathy in children: Some theoretical and empirical consideration. *Counseling Psychologist*, 5, 25-30.

Gibb B. E., Schofield C. A., Coles M. E. (2009). Reported history of childhood abuse and young adults' information-processing biases for facial displays of emotion. *Child Maltreatment,* 14, 148–156.

Gnepp, J., McKee, E., & Domanic, J. A. (1987). Children's use of situational information to infer emotion: Understanding emotionally equivocal situations. *Developmental Psychology*, 23, 114-123.

Godleski, S.A., & Ostrov, J.M. (2010). Relational aggression and hostile attribution biases: Testing multiple statistical methods and models. *Journal of Abnormal Child Psychology,* 38, 447-458.

Gross, A.L., & Baliff, B. (1991). Children's understanding of emotion from facial expressions and situations: A review. *Developmental Review*, 11, 368-398.

Halberstadt, A. G. (1986). Family socialization and nonverbal communication styles and skills. *Journal of Personality and Social Psychology*, 51, 827–836.

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-Based Approach*. New York: The Guilford Press.

Hendriks, M. C. P., & Vingerhoets, A. J. J. M. (2006). Social messages of crying faces: their influence on anticipated person perception, emotions and behavioural responses. *Cognition and Emotion*, 20, 878–886.

Hoffman, M.L. (1987). The contribution of empathy to justice and moral judgment. In N. Eisenberg and J. Strayer (Eds.), *Empathy and its development* (pp. 47–80). New York: Cambridge University Press.

Hosegood V. (2009) The demographic impact of HIV and AIDS across the family and household life-cycle: Implications for efforts to strengthen families in sub-Saharan Africa. *AIDS Care*. 21, 13–21.

Kanat-Maymon, M., & Assor, A. (2010). Perceived maternal control and responsiveness to distress as predictors of young adults' empathic responses. *Personality and Social Psychology Bulletin*, 36, 33-46.

Kerestes, G. (2006). Children's aggressive and prosocial behavior in relation to war exposure: Testing the role of perceived parenting and child's gender. *International Journal of Behavioral Development*, 30, 227-239.

Klimes-Dougan, B., & Kistner, J. (1990). Physically abused preschoolers' responses to peers' distress. *Developmental Psychology*, 26, 599 – 602.

Koenig, A. L., Cicchetti, D., & Rogosch, F. A. (2004). Moral development: The association between maltreatment and young children's prosocial behaviors and moral transgressions. *Social Development*, 13, 87-106.

Leist T., & Dadds, M.R. (2009). Adolescents' ability to read different emotional faces relates to their history of maltreatment and type of psychopathology. *Clinical Child Psychology and Psychiatry*, 14, 237-50.

Li, Y., Li, H., Decety, J., & Lee, K. (2013). Experiencing a natural disaster alters children's altruistic giving. *Psychological Science*, 24, 1686-1695.

Macfie, J., Toth, S.L., Rogosch, F.A., Robinson, J., Emde, R.N., Cicchetti, D. (1999). Effect of maltreatment on preschoolers' narrative representations of responses to relieve distress and of role reversal. *Developmental Psychology*, 35, 460–465.

Main, M, & George, C. (1985). Responses of abused and disadvantaged toddlers to distress in agemates: A study in the daycare setting. *Developmental Psychology*, 21, 407-412.

Nas, C.N., Orobio de Castro, B., & Koops, W. (2005). Social information processing in delinquent adolescents. *Psychology, Crime, & Law*, 11, 363-375.

Penton-Voak, I.S., Thomas, J., Gage, S.H., McMurran, M., McDonald, S., Munafo`, M.R. (2013). Increasing recognition of happiness in ambiguous facial expressions reduces anger and aggressive behavior. *Psychological Science*, 24, 688–97.

Perlman, S.B., Kalish, C.W., and Pollak, S.D. (2008). The role of maltreatment experience in children's understanding of the antecedents of emotion. *Cognition and Emotion*, 22, 651-670.

Pollak, S. D. (2003). Experience-dependent affective learning and risk for psychopathology in children. "*Roots of mental illness in children*" (pp. 102–111). New York Academy of Sciences, New York, NY.

Pollak, S. D. (2008). Mechanisms linking early experience and the emergence of emotions: Illustrations from the study of maltreated children. *Current Directions in Psychological Science*, 17, 370–375.

Pollak, S.D. (2013). Emotion and Learning: New approaches to the old nature-nurture debate. In S. Gelman and M. Banaji (Eds). *Navigating the social world: What infants, children, and other species can teach us*. NY: Oxford University Press, pp. 54-57.

Pollak, S. D., Cicchetti, D., Hornung, K., & Reed, A. (2000). Recognizing emotion in faces: developmental effects of child abuse and neglect. *Developmental Psychology*, 36, 679.

Pollak, S. D., & Kistler, D. J. (2002). Early experience is associated with the development of categorical representations for facial expressions of emotion. *Proceedings of the National Academy of Sciences*, USA, 99, 9072–9076.

Pollak, S. D., Messner, M., Kistler, D. J., & Cohn, J. F. (2009). Development of perceptual expertise in emotion recognition. *Cognition*, 110, 242–247.

Pollak, S. D., & Sinha, P. (2002). Effects of early experience on children's recognition of facial displays of emotion. *Developmental Psychology*, 38, 784–791

Quiggle, N. L., Garber, J., Panak, W. F., & Dodge, K. A. (1992). Social information processing in aggressive and depressed children. *Child Development*, 63, 1305-1320.

Schulz, D., Izard, C.E., & Bear, G. (2004). Children's emotion processing: Relations to emotionality and aggression. *Development and Psychopathology*, 16, 371-387.

Scrimin, S., Moscardino, U., Capello, F., Altoè, G., & Axia, G. (2009). Recognition of facial expressions of mixed emotions in school-age children exposed to terrorism. *Developmental Psychology*, 45, 1341-1352.

Shackman, J.E., Shackman, A.J., & Pollak, S.D. (2007). Physical abuse amplifies attention to threat and increases anxiety in children. *Emotion*, 7, 838-852.

Shipman, K. L., & Zeman, J. (2001). Socialization of children's emotion regulation in mother-child dyads: A developmental psychopathology perspective. *Development and Psychopathology*, 13, 317–336.

Staub, E., & Vollhardt, J. (2008). Altruism born of suffering: The roots of caring and helping after experiences of personal and political victimization. *American Journal of Orthopsychiatry*, 78, 267– 280.

Strayer, J. (1987). Affective and cognitive perspectives on empathy. In N. Eisenberg & J. Strayer (Eds.), *Empathy and its development* (pp. 218-244). New York: Cambridge University Press.

Solomon, D., Battistich, V., Watson, M., Schaps, E., & Lewis, C. (2000). A six-district study of educational change: Direct and mediated effects of the child development project. *Social Psychology of Education*, 4, 3–51.

Sullivan, M. W., Carmody, D. P., & Lewis, M. (2010). How neglect and punitiveness influence emotion knowledge. *Child Psychiatry & Human Development*, 41, 285-298.

Tottenham, N., Phuong, J., Flannery, J., Gabard-Durnam L., Goff, B. (2013). A Negativity bias for ambiguous facial expression valence during childhood: converging evidence from behavior and facial corrugator muscle responses. *Emotion*, 13, 92-103.

The United Nations Children's Fund. (2010). *Children and AIDS: Fifth Stocktaking Report, 2010.* Retrieved from http://www.unicef.org/publications/index_57005.html.

Umiltà M.A., Wood R., Loffredo F., Ravera R., Gallese V. (2013) Impact of civil war on emotion recognition: the denial of sadness in Sierra Leone. *Frontiers in Psychology*, 4, 523.

Van Doorn, E. A., Heerdink, M. W., & Van Kleef, G. A. (2012). Emotion and the construal of social situations: inferences of cooperation versus competition from expressions of anger, happiness, and disappointment. *Cognition and Emotion*, 26, 442–461.

Wismer Fries, A. B., & Pollak, S. D. (2004). Emotion understanding in post- institutionalized Eastern European children. *Development and Psychopathology*, 16, 355-369.

World Bank (2011). Child Needs Assessment (CNA) Toolkit. Retrieved from http://siteresources.worldbank.org/INTECD/Resources/CNAToolkit.pdf.

World Bank. (2002). Instruments of the Social Capital Assessment Tool. Retrieved from http://siteresources.worldbank.org/INTSOCIALCAPITAL/Resources/Social-Capital-Assessment-Tool--SOCAT-/annex1.pdf.

Zaki, J. (2014). Empathy: A motivated account. *Psychological Bulletin,* 140, 1608-1647.

# Appendix A: Tables

**Table 2.1**
Demographic Characteristics

| Variables | Comparison (n = 42) | Foster (n = 47) | Rural Poor (n = 34) |
|---|---|---|---|
| Demographics | | | |
| Age | 12.74[a] | 14.85[b] | 14.59[b] |
| Year in School | 7.12[a] | 6.28[b] | 6.79 |
| Sex (% girls) | 52.38 | 44.68 | 52.94 |
| % one or both parents died | 7.32[a] | 35.56[b] | 29.41 |
| Mean Adversity (age covaried) | 0.16[a] | 0.37[b] | 0.38[b] |

*Note.* Values with differing superscripts within rows are significantly different at $p < .05$ with the Bonferroni correction for multiple comparisons. The adversity score corresponded to the proportion of negative experiences in the family and community that the child reported had occurred out of all of those about which they were asked.

**Table 2.2.** Mediational Models of Adversity Exposure, Sadness and Anger, and Empathic Concern.

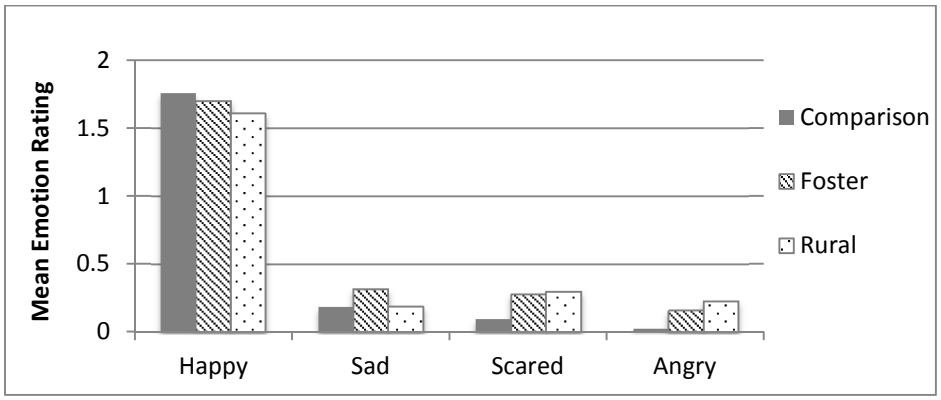
| | | **Mediator 1 (Sadness) Estimate (SE)** | | **Mediator 2 (Anger) Estimate (SE)** | | **Total Effect Estimate (SE)** | | **Direct Effect Estimate (SE)** | | **Indirect Effect Estimate (95% CI)** |
|---|---|---|---|---|---|---|---|---|---|---|
| a. Ambiguous Images | | | | | | | | | | |
| Constant | | 1.36(.06)*** | | .44(.06)*** | | 14.21 (.45)*** | | 10.14 (.94)*** | | |
| Poor vs. Comparison | $a_1$ | -.24 (.09)** | $a_2$ | 1.25 (.65) $_t$ | $c_1$ | - 1.38 (.67)* | $c_1'$ | -1.50 (.77) $_t$ | $a_1*b_1$ | -.62 (-1.40, -0.18) * |
| | | | | | | | | | $a_2*b_2$ | .75 (-0.04, 1.72) |
| Foster vs. Comparison | $a_3$ | -.11 (.09) | $a_4$ | .50 (.08)*** | $c_2$ | -.12 (.62) | $c_2'$ | -.45 (.65) | $a_3*b_1$ | -.27 (-0.81, 0.09) |
| | | | | | | | | | $a_4*b_2$ | .60 (-0.03, 1.40) |
| Perceived Sadness | | | | | | | $b_1$ | 2.57( .68)*** | | |
| Perceived Anger | | | | | | | $b_2$ | 1.25 ( .65) $_t$ | | |
| b. Negative Images | | | | | | | | | | |
| Constant | | 1.66(.07)*** | | .88(.09)*** | | 16.03 (.46)*** | | 12.58 (1.15)*** | | |
| Poor vs. Comparison | $a_1$ | -.20 (.09)* | $a_2$ | .42 (.14)** | $c_1$ | -.41 (.67) | $c_1'$ | .03 (.70) | $a_1*b_1$ | -.42 (-1.04, -0.05) * |
| | | | | | | | | | $a_2*b_2$ | -.02 (-0.40, 0.28) |
| Foster vs. Comparison | $a_3$ | -.03 (.09) | $a_4$ | .50 (.13)*** | $c_2$ | .87 (.62) | $c_2'$ | .95 (.64) | $a_3*b_1$ | -.05 (-0.50, 0.26) |
| | | | | | | | | | $a_4*b_2$ | -.02 (-0.42, 0.36) |
| Perceived Sadness | | | | | | | $b_1$ | 2.09( .65)** | | |
| Perceived Anger | | | | | | | $b_2$ | -.05 ( .46) | | |

*Note.* Unstandardized regression coefficients and corresponding standard errors are presented for the two multiple mediation models. * p < .05, ** p < .01, *** p < .001, $t$ = .053 - .058.

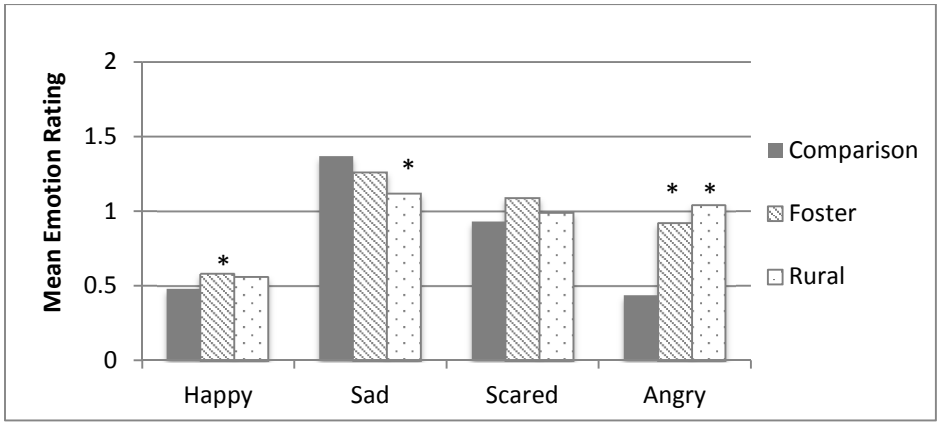
# Appendix B: Figures

**Figure 2.1.** Group Differences in Emotion Understanding.

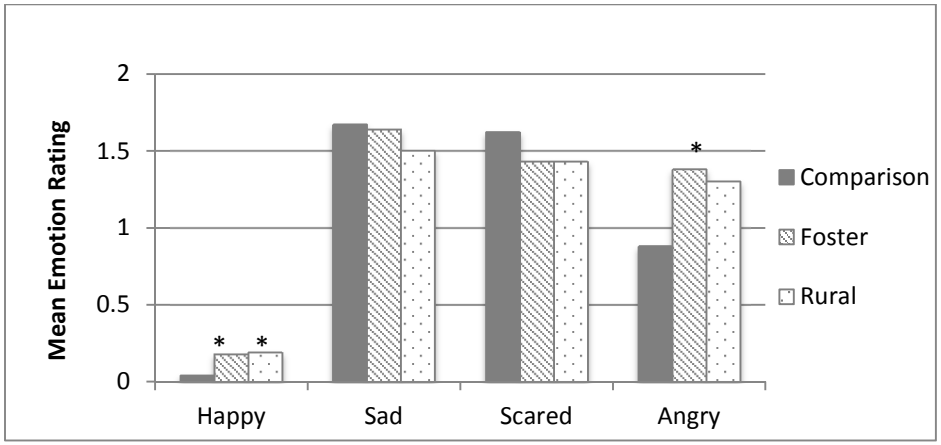
A) Positive Images




B) Ambiguous Images



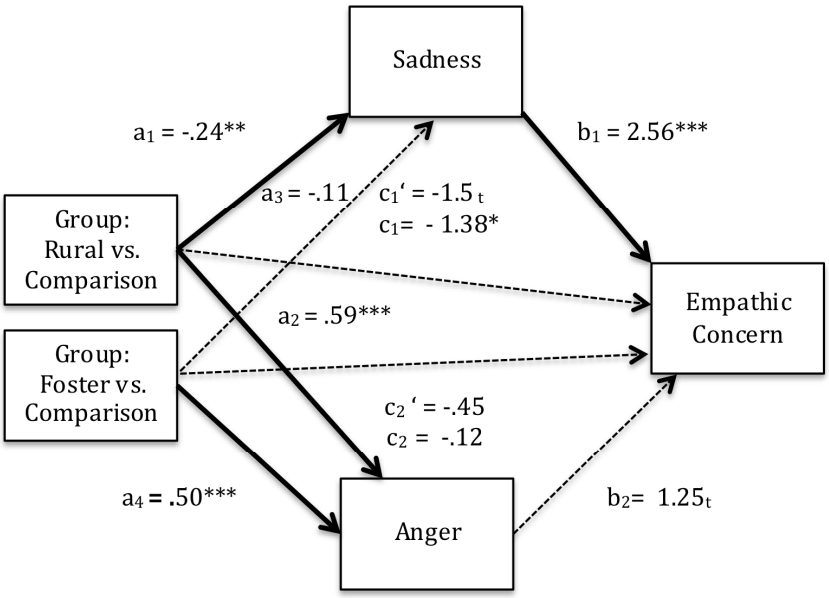

C) Negative Images




*Note*. Asterisks denote significant group differences within each emotion between the two adversity-exposed groups and the comparison group, post-hoc *p*s < .05.

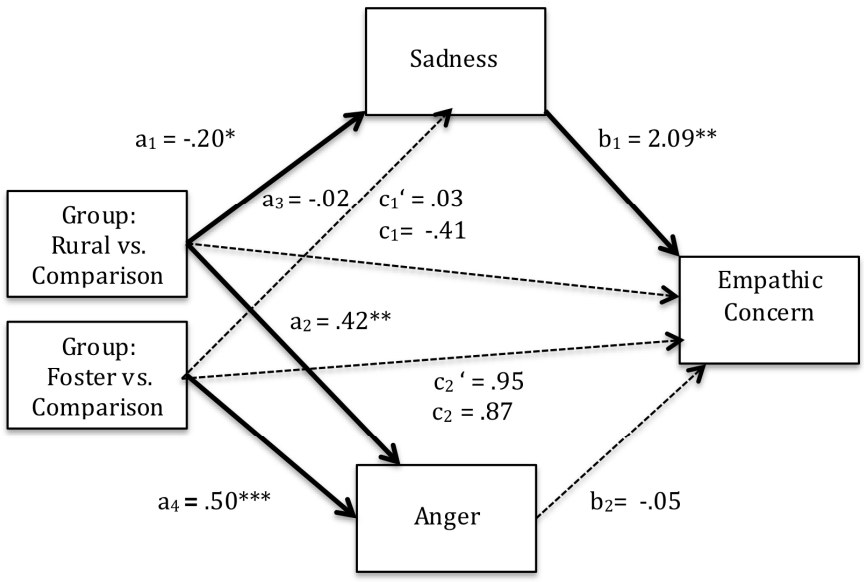
**Figure 2.2**. Multiple Mediation Models.

A) Ambiguous Image




*Note*. Values shown are unstandardized regression coefficients, with significant paths, $p < .05$, bolded. * $p < .05$, ** $p < .01$, *** $p < .001$, $t = .053$ - $.058$.

B) Negative Images




*Note*. Values shown are unstandardized regression coefficients, with significant paths, $p < .05$, bolded. * $p < .05$, ** $p < .01$, *** $p < .001$.