

ABSTRACT

Introduction: Many of the children receiving services from Children's Aid Society of Toronto (CAST) enter care in early childhood. This is a critical developmental period as it lays the foundation for socio-cognitive and motor development – powerful predictors of health, socioeconomic and employment status. Work describing the effects of child welfare on the development of children in care has been extremely limited. **Objective:** This study assessed the factors affecting socio-cognitive and motor development and the effects of CAST intervention on developmental milestones in children aged 1-2, who had received one year of care. **Methods:** This study analysed trends in the Ontario Looking After Children project database, developed from an age-specific questionnaire administered after care placement. The 2007 questionnaire was used to evaluate socio-cognitive development in 24 children and motor development in 22 children. Descriptive variables, such as health problems, early risk, physical or emotional harm and neglect were compared to proportionate scores assessing social and motor development. SPSS was used to construct variables, test reliability, and conduct correlation and regression model analyses. **Results:** Health problems were found to have a direct significant negative correlation with both the motor and the social proportionate scores. When the effects of health problems were partialled out, early risk showed a significant positive correlation with the motor and socio-cognitive proportionate scores. **Discussion:** The positive correlation between motor and socio-cognitive development scores and early risk may have resulted from more effective identification of at risk children and earlier intervention by CAST. This supports early involvement of CAST in high-risk families in order to improve developmental outcomes. Using this analysis of pre-intervention measures, future longitudinal analyses can be done to assess the development of children under the care of CAST.

Assessing the Changes in Social and Motor Development of Children Under the Care of the Children's Aid Society of Toronto

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BACKGROUND

- Children's Aid Society of Toronto (CAST) is one of Canada's largest child welfare organizations. Many children receiving CAST services enter care in early childhood.
- Early childhood experiences have long-term effects on physical, social, mental, and emotional development of children. Infants and children who are neglected or abused are at a higher risk for injuries and a number of behavioral, social and cognitive problems later in life.¹
- Motor and socio-cognitive developmental milestones, age-specific tasks that normal healthy children should be able to achieve at certain stages in their development, can be used as a measure of how a child is developing.
- Limited data show impaired motor and socio-cognitive developmental milestones in children who live in institutions², foster homes³, or in environments of abuse and neglect.^{4,5}

RESEARCH QUESTION

- What are the important factors that influence the motor and social development of children (ages 1-2) entering under the care of the Children's Aid of Society of Toronto?
- What is the impact of the Children's Aid Society of Toronto intervention on the changes of motor and social development of children (ages 1-2) receiving 1 year of care?

METHODS

Database selection: A 2007 age-specific questionnaire administered after 1 year in CAST care, called Ontario Looking After Children Assessment and Action Record (ONLAC AAR), was used. Data included information on subjects' health, education, identity, family, relationships, presentation, development, and self care.

Database preparation and data cleaning: SPSS was used for all data manipulation. Data was sorted by age, selecting for ages 1-2 and split to allow for separate motor and socio-cognitive development analysis. It was then cleaned from 651 to less than 200 items and the data was recoded to binary code (0, 1, -). Continuous scores were not changed. Subjects for analysis were chosen based on full completion of the questions relating to development. Socio-cognitive and motor development were analyzed in 24 and 22 children respectively.

Variable construction: Descriptive variables, such as health problems, early risk, harm and neglect, were constructed based on grouping suggested in the AAR. Mean, aggregate and proportion scores were calculated to construct appropriate variables.

Reliability analysis: Only items with significant variance (appropriate distribution as seen in stem and leaf plots) and with high internal consistency (Cronbach's Alpha >0.7) were chosen in variable construction. Items found to have incorrectly negative correlations were reverse-scaled.

Correlation analysis: Direct correlations of constructs with motor and socio-cognitive development proportion scores were calculated.

Partial correlation analysis: Partial correlations of constructs with motor and socio-cognitive development proportion scores were calculated by controlling for confounding factors, such as gender.

Regression models: The degree to which independent constructs were related to development was calculated to allow for prediction of the outcomes (development) based on a combination of specific measures (variable constructs).

RESULTS

Table 1 Direct Correlations Between Motor & Social Proportionate Scores and Descriptive Variables

		Motor Proportionate Score	Social Proportionate score
Health Problems	Pearson Correlation (r)	-0.582 *	-0.271
	Significance (p)	0.005 *	0.200
Early Risk	Pearson Correlation (r)	0.356	0.476 *
	Significance (p)	0.104	0.019 *

A table depicting the direct correlations between motor and social proportionate score and the two descriptive variables of health problems and early risk. * p < 0.05

Table 2 Partial Correlations Between Motor & Social Proportionate Scores and Descriptive Variables with Various Controlled Variables

Controlled Variables			Motor Proportionate Score	Social Proportionate Score
Gender	Health Problems	Pearson Correlation (r _p)	-0.574 *	-0.362
	Significance (p)		0.010 *	0.09
Early Risk	Health Problems	Pearson Correlation (r _p)	0.403	0.452 *
	Significance (p)		0.07	0.03 *
Health Problems	Early Risk	Pearson Correlation (r _p)	0.461 *	0.495 *
	Significance (p)		0.036 *	0.016 *
Early Risk	Health Problems	Pearson Correlation (r _p)	-0.635 *	-0.308
	Significance (p)		0.002 *	0.152

A table depicting the partial correlations between motor and social proportionate score and descriptive variables when gender, health problems, and early risk are individually controlled for. * p < 0.05

Table 3 Regression Model of Motor Proportionate Scores

Model Summary										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.284 ^a	.085	.007	2.950 ^b	.085	1.157	1	20	.285	
2	.582 ^a	.339	.270	2.531 ^b	.285	8.183	1	19	.010	
3	.697 ^a	.485	.399	2.295 ^b	.146	5.100	1	18	.037	

a. Predictors: (Constant), gdmc3: youth's gender
 b. Predictors: (Constant), gdmc3: youth's gender, healthproblems
 c. Predictors: (Constant), gdmc3: youth's gender, healthproblems, earlyrisk

A regression model using the descriptive variables that had a significant correlation to motor proportionate scores. Model 1 shows the amount of variance in the motor proportionate score that gender accounts for. Model 2 shows the amount of variance that health problems accounts for and Model 3 shows the amount of variance that early risk accounts for. The R square change values represent the amount of variance while Sig. F Change represents the p value.

Table 4 Regression Model of Social Proportionate Scores

Model Summary										
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.280 ^a	.078	.036	2.191 ^b	.078	1.869	1	22	.185	
2	.446 ^a	.199	.122	2.091 ^b	.120	3.157	1	21	.090	
3	.612 ^a	.375	.281	1.893 ^b	.176	5.627	1	20	.028	

a. Predictors: (Constant), gdmc3: youth's gender
 b. Predictors: (Constant), gdmc3: youth's gender, healthproblems
 c. Predictors: (Constant), gdmc3: youth's gender, healthproblems, amount of early family risk

A regression model using the descriptive variables that had a significant correlation to social proportionate scores. Model 1 shows the amount of variance in the motor proportionate score that gender accounts for. Model 2 shows the amount of variance that health problems accounts for and Model 3 shows the amount of variance that early risk accounts for. The R square change values represent the amount of variance while Sig. F Change represents the p value.

FIG. 1 Direct Correlations Between Motor & Social Proportionate Scores and Health Problems and Early Risk

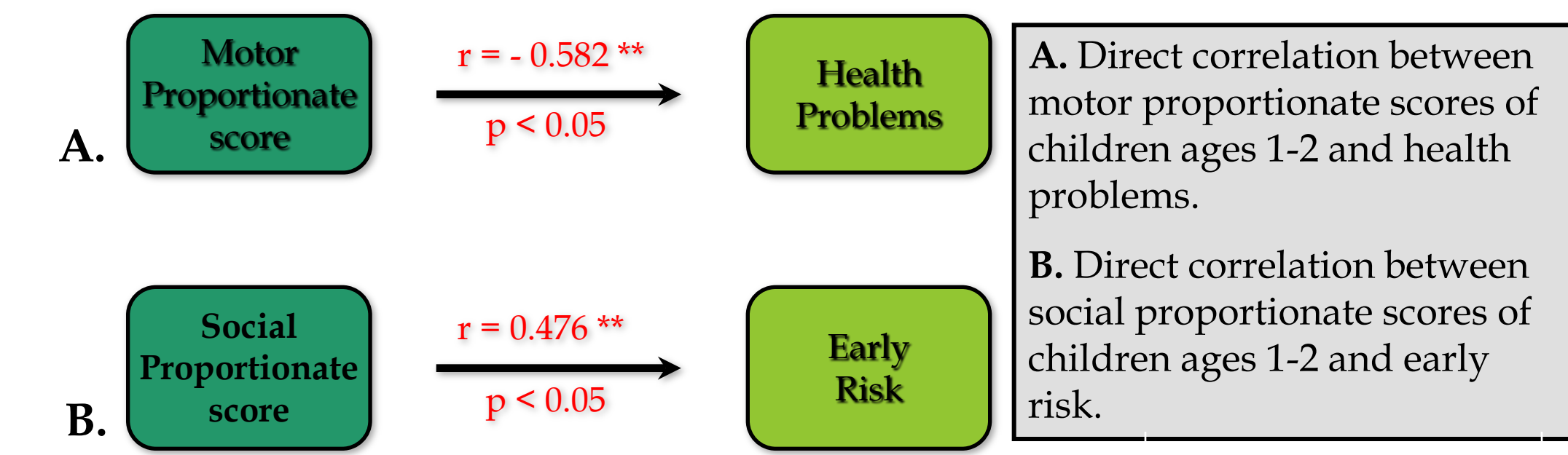


FIG. 2 Partial Correlations Between Motor & Social Proportionate Scores and Descriptive Variables

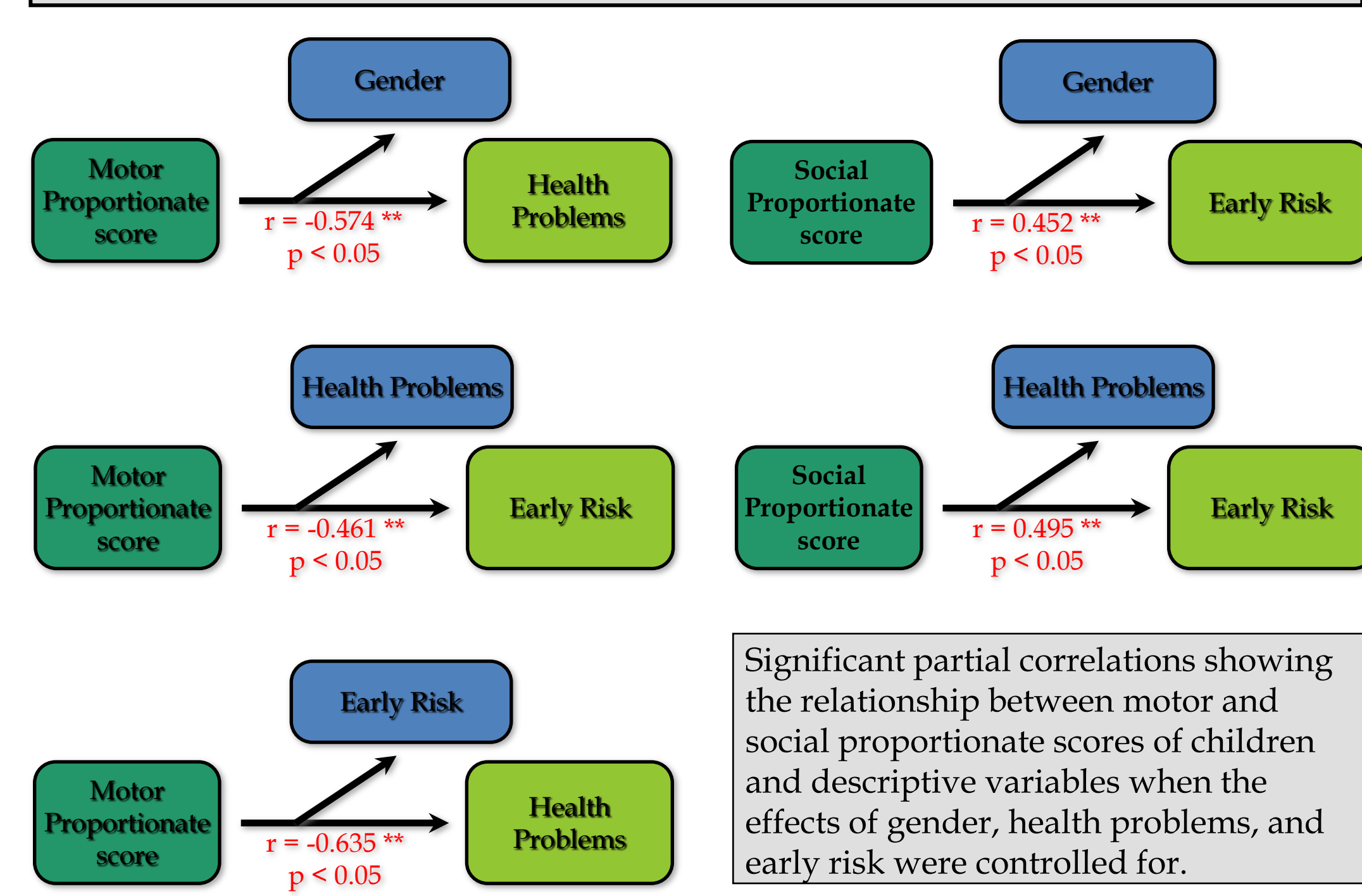
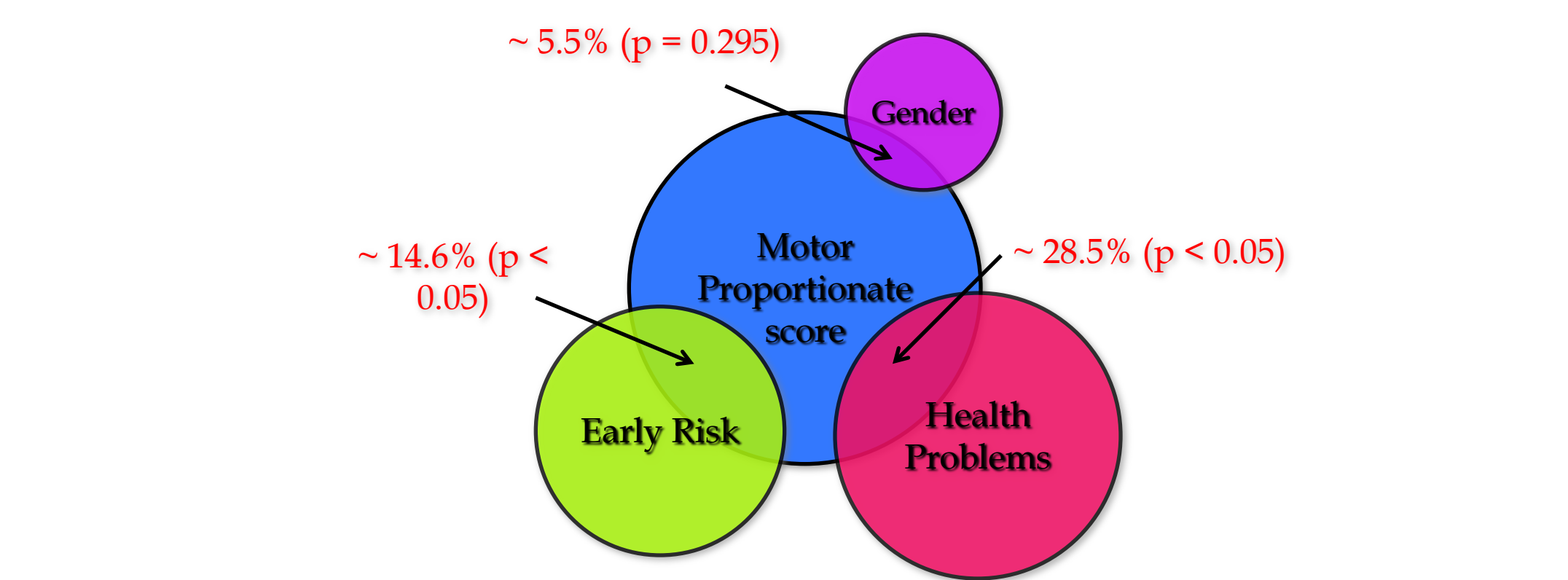
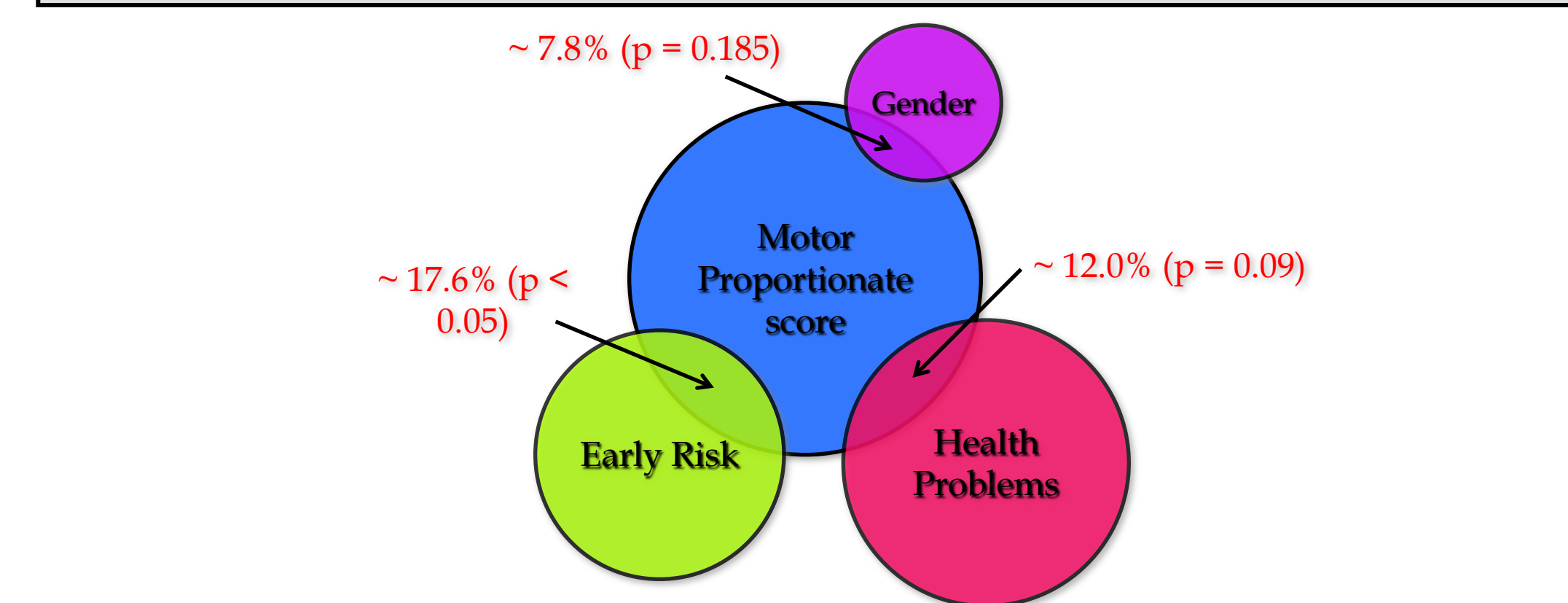


FIG. 3 Regression Model of Motor Proportionate Scores



A Venn diagram representing the regression model. The common area shared by the motor proportionate score and a descriptive variable (Gender, health problems, and early risk) represents the variance in the motor score that was accounted for by that descriptive variable.

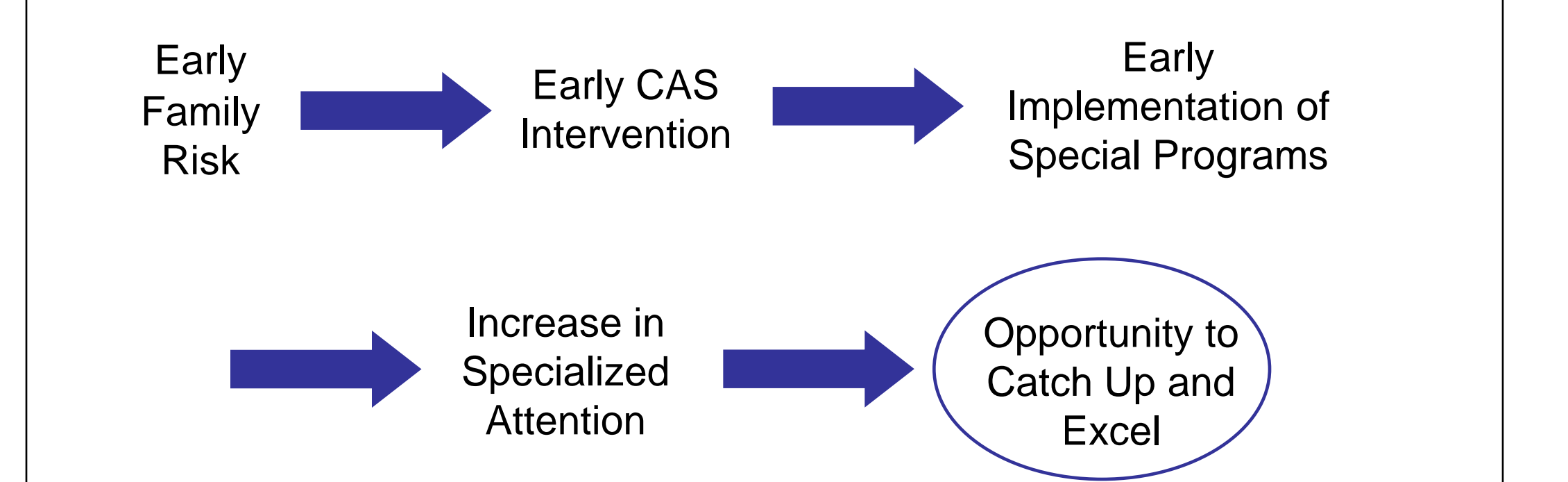
FIG. 4 Regression Model of Social Proportionate Scores



A Venn diagram representing the regression model. The common area shared by the social proportionate score and a descriptive variable (Gender, health problems, and early risk) represents the variance in the social score that was accounted for by that descriptive variable.

Discussion

- Interestingly, variables not found to correlate with developmental outcomes included behavioural development, parenting/educational activities abandonment, separation and neglect, and number of different caregivers.
- Two variables were found to strongly correlate with both motor and socio-cognitive developmental outcomes: health problems and early family risk.
- The inverse correlation of health with developmental outcomes was not surprising as health problems directly impede the achievement of both motor and socio-cognitive developmental milestones.
- The correlation of early family risk with developmental outcomes was a surprising result as the correlation was found to be positive. Furthermore, the strong correlation persisted even when health factors were taken into consideration via partial correlation analysis. The following model is suggested as a hypothetical explanation:



- These results are in contrast to studies showing poor outcomes with early child welfare involvement.

FUTURE DIRECTIONS

- As the AAR was only mandated in 2006, very few data sets with adequate sample sizes were available. Missing data sample sizes even smaller.
- With only one sufficiently complete data set, for 2007, an originally-planned longitudinal data analysis was not possible.
- With continued implementation of the AAR by CAS, more data sets will become available. Analysis should be repeated in a data set with a high number of subjects, potentially for the year 2010. Longitudinal data would allow for analysis of long-term effects of specific variables, long-term effects of CAS involvement and, importantly, the end outcomes.

CONCLUSION

Preliminary analysis shows that early family risk, likely leading to an earlier intervention by CAST, leads to an improved outcome in both motor and socio-cognitive development.

Acknowledgements: We would like to thank Dr. Connie Cheung and Dr. Deborah Goodman (Children's Aid Society of Toronto) for their help and support.
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