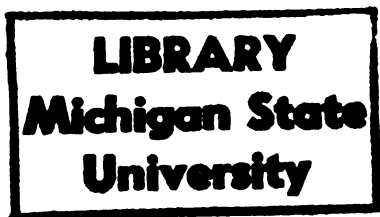


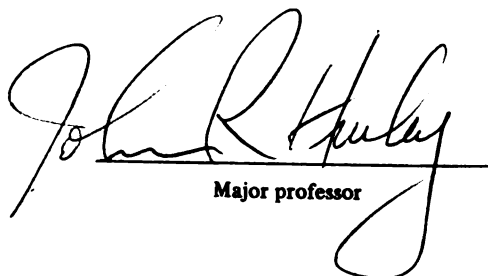


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**PREDICTING SIBLING PERSONALITY DIFFERENCES
FROM NON-SHARED ENVIRONMENTAL FACTORS**

By

Tammy Lynn Mann

A THESIS

**Submitted to
Michigan State University
in partial fulfillment of the requirements
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ABSTRACT

PREDICTING SIBLING PERSONALITY DIFFERENCES FROM NON-SHARED ENVIRONMENTAL FACTORS

By

Tammy Lynn Mann

This study examined the extent to which non-shared environmental factors could predict sibling personality differences in comparison to selected family constellation variables (i.e., sex, age, birthorder). The participants were 100 biologically related sibling pairs less than four years apart in age. Half were university resident Introductory Psychology students while their siblings resided elsewhere, usually at home. Their separate responses to the Sibling Inventory of Differential Experience (SIDE) assessed non-shared environmental factors, and personality variables were similarly assessed by the Emotionality Activity Sociability (EAS) Inventory. The correlations of siblings' EAS responses were generally weak and statistically nonsignificant (median same-sex $r = .06$) consistent with data obtained in prior studies. Contrary to the central hypothesis, the family constellation variables tended to correlate more firmly with sibling EAS differences than did the non-shared environmental factors. Limitations and implications of the findings were discussed.

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INTRODUCTION

It seems logical to believe that siblings who grow-up in the same home environment, exposed to the same parents and community, should resemble each other in terms of personality. After all, early experiences, especially in the home, are thought to be related to subsequent development. While that may seem plausible, empirical evidence suggests that siblings are not very similar on a variety of personality variables. This study will examine this issue by exploring aspects of environmental experiences that are different for sibling pairs which may help understand the development of dissimilar personalities between siblings.

REVIEW OF RELEVANT LITERATURE

Nearly 50 years ago Woodworth (1941) proposed that siblings in the same family are likely to develop quite different personality styles. Crook's (1937) earlier study reported an average sibling correlation of .12 for personality resemblance using the Bernreuter Personality Inventory. The magnitude of sibling resemblance correlations reported in Crook's study is similar to those being reported currently. Plomin and Daniel's (1987) review examined studies which suggested .16 as the average non-twin sibling correlation for personality variables. Based on Scarr and Grajek's (1982) review of studies in this area, the degree of sibling resemblance on personality measures typically ranges from .15 to .20 for biologically related non-twin siblings.

Dixon and Johnson (1980) described research conducted in Hawaii which reported average sibling correlations ranging from .03 to .19 when investigators utilized four different instruments measuring personality (Cattell's Sixteen Personality Factor Questionnaire, Comrey's Personality Inventory, Eysenck's Personality Inventory, and an Adjective Checklist). Conclusions from the work in Hawaii suggested fairly weak sibling resemblance on personality variables.

For cognitive variables, intersibling correlations typically range from .35 to .50 (Rowe & Plomin, 1981).

Reported correlations for monozygotic (MZ) and dizygotic (DZ) twins on measures of ability are usually as high as .82 and .52 respectively. In terms of personality resemblance however, correlations are much lower for twin and non-twin siblings. For example, in a study conducted by Loehlin and Nichols (1976) correlations for MZ and DZ twins on three personality factors of the California Psychological Inventory were, respectively, .50 and .30 on sense of well being; .53 and .35 on tolerance; and .48 and .30 on good impression. Similar correlations were found in another study by Lykken, Tellegen, and DeRubeis (1978). While these correlations are much higher than those for personality measures, those for non-twin siblings were weaker.

These data suggest that siblings who grow up in the same home environment sharing the same parents and community show little resemblance on personality variables. This was especially true for non-twin siblings. The observation that MZ twins were the most similar, followed in turn by DZ twins and non-twin siblings, suggests that genes may influence both cognitive and personality development. This particular observation is a current point of much contention in the literature. Some argue that these differences are accounted for by environmental factors while others argue that these differences are

primarily genetically mediated with environment playing a secondary role. Before examining research supporting the validity of such arguments, it seems necessary to discuss factors that researchers seem to agree do not account for the magnitude of personality dissimilarity between siblings.

Several investigators have studied a variety of factors that may be related to sibling dissimilarity on personality factors. Constellation variables such as birth order, age, and sex of the sibling have been studied and offered as a partial explanation for such differences (Jacobs & Moss, 1976; Hilton, 1967; Lohman & Christenson, 1985; Abramovitch, Corter, Pelper, & Stanhope, 1986). A major assumption implicit in studying constellation variables is the idea that differences in sibling constellation leads to environmental differences. For example, differences in age perhaps leads to differences in parental treatment (i.e., parents being most strict on older siblings compared to younger ones) or sex differences leading to differential parental treatment (i.e., males being socialized to be aggressive and females being socialized towards passivity). These differences produce different environments for siblings (Scarr & Grajek, 1982).

While there have been studies conducted to support the

importance of constellation variables (Jacob & Moss, 1976; Lohman, Lohman, & Christenson, 1985) most researches believe, however, that the amount of variance these factors account for is so minute (less than 10%) that there must be other factors which better explain intersibling personality differences (Daniels & Plomin, 1985; Scarr & Grajek, 1982; Hauser & Sewell, 1985; Daniels & Plomin, 1987; Plomin & Foch, 1981; Ernst & Angst (1983); Scarr, Webber, Weinberg, & Wittig, 1981).

Scarr and Grajek (1982) propose a genotype-environment (G--->E) correlation theory which incorporates contributions from an individual's genetic make-up as well as their environmental experiences when examining intersibling differences. They posit that the degree of personality dissimilarity amount of difference will depend upon genetic as well as environmental differences. Thus, the model integrates aspects of nature and nurture in terms of explaining such differences.

In addition to describing the basic propositions of the model Scarr and Grajek also hypothesize the likely process whereby such differences occur. Conceptually, three kinds of G--->E correlations are proposed to explain why environmental differences between siblings are likely to occur: (1) passive; (2) evocative; and (3) active. Passive G--->E correlations are thought to occur as a

result of genetically related parents providing child-rearing environments consistent with the child's genotype. With the passive $G \rightarrow E$ correlations the parent's genotype is said to correlate with the child's genotype. Since parents provide an environment that correlates with their own genotype, the environment is also assumed to correlate with the genotype of the child. Evocative $G \rightarrow E$ correlations suggest that the responses of children with different genotypes are likely to evoke different responses from those in his/her environment. These responses from others help shape subsequent development and are also likely to correlate positively with the individual's genotype. Active $G \rightarrow E$ correlations reflect an individuals' tendency to seek out environments which he/she finds compatible and stimulating. Each of these $G \rightarrow E$ correlations are viewed in a developmental context with passive $G \rightarrow E$ being most predominant in infancy and childhood, and active being most characteristic of late adolescence and adulthood. Evocative effects are likely to exist throughout development. The conceptual foundation of the model, regardless of the type of correlation explained, suggests that differences occur as a result of differences in a person's genetic structure.

Other investigators have proposed that while genetics may influence differences in personality between siblings,

a theory stressing the importance of non-shared aspects of an individual's environment may be related to intersibling variance in personality (Daniels, & Plomin, 1985; Daniels, 1986; Dunn & Kendrick, 1982). Rowe and Plomin (1981) presented a theoretical framework for understanding sources of intersibling personality differences as well as cognitive differences. These researchers suggested that the following are possible examples of non-shared environmental factors which could be related to intersibling differences: (1) accidental factors which are experiences unique to the individual; (2) nature of sibling interaction; (3) family structure; (4) differences in parental treatment; and (5) differences in extra-familial networks.

Rowe and Plomin (1981) also reviewed research conducted in each of the above stated areas. They indicated that while accidental factors (i.e., physical illness, prenatal and postnatal trauma, separation) would probably be very effective in explaining individual differences, these same factors would be ineffective when used to explain differences in the general population. Research conducted on exploring the nature of the sibling relations suggests that this may not be a major source of non-shared environmental influence. Research in this area suggested that siblings behaved mutually towards each other

rather than complementary (Abramovitch, Corter, & Lando, 1979; Lamb, 1978). Dunn (1983) however, conducted a study examining the nature of sibling relations in early childhood and found some evidence that siblings do behave in complementary rather than mutual manners.

Research on family structure variables as sources of non-shared environment have already been discussed in the section on constellation variables. In terms of parental treatment, Rowe and Plomin also conclude, contrary to popular opinion, that parents actually treat their children more alike than different. Other researchers however, suggest that differential parental treatment does occur in families (Hilton, 1967; Jacobs & Moss, 1976). Daniels et al (1985) found evidence that children reported being treated differentially by parents who perceive themselves as treating their children similarly.

The area of extra-familial networks proved to be one of the more promising major sources of non-shared environment. Rowe and Plomin reviewed research which suggested that siblings contact with diverse peer groups, extended family members, or teachers may be highly related to intersibling dissimilarity on personality measures.

Not until recently have there been research efforts directed at examining multiple factors and utilizing instruments that specifically address the effects of non-

shared environment on personality dissimilarity (Daniels, 1986; Daniels & Plomin, 1985; Daniels, Dunn, Furstenberg, & Plomin, 1985). Conclusions about the significance of non-shared environments in explaining intersibling personality differences have been based on research with genetically unrelated (adopted) siblings whose resemblances are considered a direct estimate of shared sibling environment since there is no genetic influence. Because adopted siblings are also dissimilar on various personality measures, this suggests that perhaps what is non-shared rather than what is shared in siblings environment may explain intersibling differences (Daniels, 1986).

While Scarr's genetic theory seems to offer an interesting explanation of why siblings may differ, it is based on assumptions difficult to assess. Scarr suggested that parents provide environments which correlate with the child's genotype. How does one measure the degree to which one's environment is a result of one's genotype? While this might be an interesting conception of how siblings develop distinct personalities, its attractiveness is somewhat diminished by the inability to assess genotypes with current technology. On the other hand, Rowe and Plomin's theory of non-shared environment lends itself to direct empirical investigation. Not only can this concept be measured through self-report inventories, it is

theoretically possible, albeit very difficult, to measure non-shared environment through direct observations.

Statement of Hypotheses

Consequently, the present study examines the extent to which self-reports of one's non-shared environment can predict and account for personality dissimilarity between biological related sibling. It is hypothesized that non-shared environmental measures will predict and account for most of the variance associated with intersibling personality differences. It is also predicted that age, sex, and birth order will account for less than 10% of the total variance in terms of personality differences.

METHOD

All sibling pairs were required to complete a number of self-report measures which assessed perceptions of environmental experiences and personality styles. University resident participants mailed out questionnaires for their respective siblings to complete and return. A detailed description of the sample, instruments, and procedures are indicated below.

Sample

The participants were 210 undergraduate students attending a major midwestern University. All were enrolled in an introductory psychology course and received extra credits toward their course grade. The final sample (after non-university resident siblings returned questionnaires that had been mailed out) consisted of 111 sibling pairs, representing a 53% return rate. Of the 111 pairs, one was half-biologically related; 2 pair were adoptive; and 8 pairs were spoiled due to non-university resident participants incorrectly completing the questionnaires or the age span between the siblings was beyond four years. Thus, 11 pairs were excluded from data analyses. Of the 100 remaining biological sibling pairs, 83 were of the same sex (37 brothers and 46 sisters) and 17 were not. Most pairs (62) were first-second born, 9 were first-third born, 14 were second-third born, 10 were third-fourth born, and the remaining six were various combinations

(second-fifth, first-fourth, etc.). The university-resident siblings ranged in age from 18 to 22; with an average age of 19.28 years ($SD = 1.08$). Their siblings partners ranged in age from 14 to 25 years; with a mean age of 19.29 years ($SD = 3.10$). The average age for the entire sample was 19.29 ($SD = 1.80$). In terms of parental education, mothers averaged 14.33 years of education while fathers averaged 15.21. Of the total sample 95% were Caucasian; 2% were African Americans; 2% were Asian Americans; and 1% was Native American.

Instruments

The Sibling Inventory of Differential Experience (SIDE) was used as a measure of non-shared environment (Daniels & Plomin 1985, 1984; Daniels, 1986). This 73-item inventory measures sibling interaction, parental treatment, peer characteristics, and events specific to the individual (the scale measuring events specific to the individual was not used in this study). The following SIDE sub-scales address 11 separate areas: (1) differential sibling antagonism; (2) differential sibling jealousy; (3) differential sibling caretaking; (4) differential sibling closeness; (5) differential maternal affection; (6) differential maternal control; (7) differential paternal affection; (8) differential paternal control; (9) differential peer college orientation; (10) differential

peer delinquency; (11) differential peer popularity. Based on a sample of 57 biological sibling pairs from the Denver metropolitan area, two-week test-retest reliabilities of these sub-scales ranged from .77 to .93, with a mean of .84 (Daniels & Plomin, 1985). Their intercorrelations were generally low to moderate and only 19 of 55 reached the .05 level of significance. Also the extent of sibling agreement was low to moderate with a $-.49$ median correlation value (the negative sign indicates agreement between the two siblings on their perceptions of their environment).

Personality in this study was operationally defined by the five temperament scales of the Emotionality Activity Sociability Temperament Inventory (EAS) (Buss & Plomin, 1984). According to Buss and Plomin, aspects of temperament assessed on this measure show the greatest amount of stability over time in terms of personality development. It is assumed by some, but not yet proven, that aspects of emotionality, activity, and sociability exist at birth and may be of genetic origin. The five temperaments assessed by the EAS include emotionality-anger, emotionality-fear, emotionality-distress, activity, and sociability. Two-week test-retest reliabilities were obtained from 34 university undergraduates yielding stability coefficients ranging from .75 to .85. The EAS

also had an overall test-retest reliability of .82. Intercorrelations among EAS scales were low to moderate with the largest significant correlation occurring between distress-anger and activity ($r = .57$). The other temperament measures were fairly independent in their structure (Buss and Plomin, 1984).

Although many problems have been identified when relying upon self-report data, this was judged the most appropriate form of data collection because perceptions of the participants are central to understanding how they interpret their environment. Nevertheless, the Marlowe-Crowne Social Desirability Scale was also administered as a control measure for positive response bias. A comparison of those participants who responded in a socially acceptable manner versus those who did not will be undertaken in the statistical analyses section. A Personal Data sheet was also completed by each participant to compile appropriate demographical information (see Appendix A, p. 33).

Procedures

There were four separate group administrations which consisted of approximately 50 participants at each session. Packets of questionnaires were placed on each desk face down when the participants arrived at the testing location. Each packet contained the following data:

1. Statement of Informed Consent
2. Personal Data Sheet
3. Sibling Inventory of Differential Experience
4. Emotionality Activity Sociability Inventory
5. Marlowe-Crowne Scale
6. Debriefing Letter
7. Form Letter
8. Envelopes
9. Sibling Packet with same information

After all participants arrived at the research location, the examiner introduced herself and the research project. All participants were told that the project was being conducted to examine how sibling relationships related to personality development. Participants were then instructed to read and sign the Statement of Informed Consent (see Appendix B, p. 35). After all participants had completed the consent form, the examiner provided necessary instructions to complete the Personal Data Sheet and the necessary SIDE information.

Once the preliminary information had been completed, they were told they could begin completing the questionnaires and to stop at any point and ask questions if they were unsure about the instructions. For those participants with more than one sibling within four years of age, a die was used to randomly determine who they were

to compare their responses to on the SIDE questionnaire. Once participants began to complete the questionnaires, the group was then given instructions on how to complete the letter that was to accompany the packet being mailed to their sister or brother (see Appendices C & D, pp. 38-41 for forms used in packets). They were also given instructions on how to fill out the envelopes in which the packets were being mailed. A debriefing note (see Appendix E, p. 43) was provided for each of the participants. After completing all necessary information participants' packets were checked to make sure they had been filled out correctly and they were then permitted to leave. This procedure was followed for each of the subsequent data collection sessions.

RESULTS

The first part of the data analyses involved providing descriptive statistics on the various measures while subsequent analyses involved examining how constellation variables and non-shared environment related to personality differences. Means and standard deviations for the Emotionality Activity Sociability Inventory (EAS) are listed below in Table 1. The present means are very similar to those in Buss and Plomin's (1984) normative sample shown in Table 1. The only statistically significant intersibling difference was university residents' higher sociability ratings.

Table 1

Means and Standard Deviations for EAS

<u>Variables</u>	<u>Sibling A</u>		<u>Sibling B</u>		<u>Normative Means</u>	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Males</u>	<u>Females</u>
Sociability	3.85*	.70	3.49	.80	3.81	3.25
Activity	3.53	.68	3.37	.75	3.35	3.20
Fear	2.62	.69	2.59	.79	2.65	2.23
Emotionality	2.39	.76	2.37	.82	2.52	2.43
Anger	2.91	.80	2.95	.86	2.57	2.70

Note. Sibling A = University Resident Sibling and Sibling B = Non-University Resident Sibling. Values ranged from 1 to 5 on the EAS with 1 being least typical of the respondent and 5 being most typical of the respondent.

*p < .001.

When separating pairs according to sex (M-M, F-F), male pairs were found to describe themselves as significantly ($p < .05$) less fearful and emotional than female pairs.

Means and standard deviations for the Sibling Inventory of Differential Experience (SIDE) were based on the relative scoring system with the following values:

- 1.00 = my sibling has been much more this way than I have;
- 2.00 = my sibling has been a bit more this way than I have;
- 3.00 = my sibling and I have been the same in this way;
- 4.00 = I have been a bit more this way than my sibling; and
- 5.00 = I have been much more this way than my sibling.

The present means (see Table 2) are very similar to those obtained in the normative sample and other research (Daniels, 1986; Plomin & Daniels, 1985). The magnitude of the present standard deviations suggest that siblings perceived aspects of their environment as being dissimilar. For example, the mean for differential sibling caretaking was 3.21 for sibling A with a standard deviation of .70. This mean implies that on the average sibling A believed that he/she differed little from sibling B on this variable. However, the variance ($SD = .70$) suggests that some group A siblings viewed themselves as being more of a caretaker while there were others who viewed group B siblings as being more of a caretaker.

Table 2

Means and Standard Deviations for SIDE Scales

<u>SIDE Scales</u>	<u>Sibling A</u>		<u>Sibling B</u>		<u>Diff. p</u>	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>		
Sibling Caretaking	3.21	.70	2.93	.71	.28	.05
Sibling Antagonism	2.91	.48	2.94	.55	-.05	
Sibling Jealousy	2.86	.78	3.36	.70	-.61	.00
Sibling Closeness	2.86	.65	3.08	.63	-.21	.05
Paternal Affection	3.09	.54	2.96	.53	.11	
Maternal Control	3.05	.69	3.15	.68	-.11	
Maternal Affection	3.05	.62	2.77	.57	.29	.008
Paternal Control	3.04	.62	3.05	.59	-.02	
Peer College Orient.	3.42	.63	2.99	.59	.43	.00
Peer Delinquency	3.33	.67	2.89	.67	.44	.001
Peer Popularity	3.02	.66	3.03	.76	-.03	

Note. Sibling A = University Resident Sibling and Sibling B = Non-University Sibling. Orient. = Orientation.

Responses on the Marlowe-Crowne Scale of Social Desirability Scale were correlated with the responses on the EAS and SIDE scales. These correlations were generally weak (maximum $r = .25$) and so few of them (5 of 32) reached significance that further analyses seemed inappropriate (see Tables 3 & 4, Appendix F, pp. 45). The lack of significant correlations between the Marlowe-Crowne with

the EAS and SIDE scales suggests the responses of participants were not likely to be related to attempts to respond to items in a socially desirable manner.

Since the primary purpose of the study involved predicting intersibling personality differences from the SIDE scales, single personality difference scores were created for each sibling pair. These scores were computed by subtracting the score of sibling B from that of sibling A separately for each EAS scale. To obtain single scores for sibling pairs on the SIDE scales their scores were averaged since sibling agreement on the SIDE measure ranged from $-.23$ to $-.73$. These negative signs indicate that siblings agree on the perceptions of their experiences measured by the SIDE (Daniels & Plomin, 1985).

Means and standard deviations for personality differences scores are listed in Table 5. None of the differences between sibling pairs were statistically significant. In addition, when scores were separated by sex of pair (M-M, F-F), there were no statistically significant differences. Means and standard deviations for the average sibling score on the SIDE scales are listed in Table 6. Even when averaged, most of the scores center around 3.00. When the sample was separated into female and male pairs, sisters viewed their mothers as differing significantly in the degree of affection given,

but brothers reported no parallel differences. No other significant gender-pair differences were found.

Table 5

EAS Scale Difference Scores Between Sibling Pairs

<u>Scales</u>	<u>Mean</u>	<u>SD</u>
Sociability	.36	1.03
Activity	.16	.94
Fear	.03	1.02
Emotionality	.02	1.06
Anger	-.03	1.13

Table 6

Means and Standard Deviations for SIDE Scales
(Sibling Pair Averages)

<u>SIDE Scales</u>	<u>Mean</u>	<u>SD</u>
Sibling Jealousy	3.10	.38
Sibling Caretaking	3.07	.29
Sibling Closeness	2.96	.38
Sibling Antagonism	2.93	.29
Paternal Control	3.06	.34
Maternal Control	3.10	.37
Paternal Affection	2.94	.43
Maternal Affection	2.90	.30
Peer College Orientation	3.22	.29
Peer Popularity	3.11	.32
Peer Delinquency	3.00	.35

Correlations for sibling personality resemblance on the EAS measures are listed in Table 7. These findings suggest rather modest intersibling resemblance. In terms of magnitude, these correlations were much like those found in other studies examining sibling resemblance. There were, however, a few statistically significant differences when correlations were separated according to sex of pair, sisters significantly resembled each other in activity level and opposite-sexed pairs significantly resembled each other in terms of emotionality.

Table 7

EAS Correlations Between Sibling Pairs

	<u>All</u> (N=100)	<u>Sisters</u> (N=46)	<u>Brothers</u> (N=37)	<u>Sis-Bro</u> (N=17)
Sociability	.05	.07	.05	.30
Activity	.11	.30**	-.12	-.08
Fear	.04	-.04	.07	.21
Emotionality	.11	-.09	.17	.41*
Anger	.09	.08	.17	.09

*p < .05.

**p < .01.

Personality Resemblance & Constellation Variables

Table 8 lists the correlations for EAS measures with constellation variables. The significant correlations

suggest that from 1% to 38% of the variance in personality difference scores may be accounted for by constellation variables (Ozer, 1985). In terms of gender, females described themselves as significantly more fearful and sociable than males. Older siblings were likely to report being more emotional than younger siblings. Finally, later-born siblings reported being more fearful than earlier-born siblings.

Table 8

Personality Difference Scores and Constellation Variables

	<u>Gender</u>	<u>Age</u>	<u>Birthorder</u>
Sociability	-.25**	-.02	.03
Activity	.02	-.13	.09
Fear	.37***	.14	.19*
Emotionality	-.13	.17*	.09
Anger	.07	.04	.06

* $p < .05$.

** $p < .005$.

*** $p < .000$.

Tables 9, 10, and 11 present correlations between personality difference scores and SIDE scores according to sibling interactions, parental treatment, and peer group characteristics respectively.

Table 9

EAS Difference Scores and Sibling Interaction

	<u>Antagonism</u> (n = 89)	<u>Caretaking</u> (n = 97)	<u>Jealousy</u> (n = 85)	<u>Closeness</u> (n = 97)
Sociability	.20*	-.16*	.16	-.06
Activity	.09	-.12	-.07	-.10
Emotionality	.12	-.04	.04	-.05
Fear	.02	.12	.02	-.11
Anger	.12	.01	.17	-.10

*p < .05.

Table 10

EAS Difference Scores and Perceived Parental Treatment

	<u>M/Affection</u> (n = 95)	<u>M/Control</u> (n = 93)	<u>P/Affection</u> (n = 90)	<u>P/Control</u> (n = 84)
Sociability	.04	-.15	.07	-.14
Activity	.03	.03	.02	-.09
Emotionality	.13	.14	-.02	.15
Fear	.00	.11	-.08	.08
Anger	.02	.04	.19*	-.12

Note. M = Maternal and P = Paternal.

*p < .05.

Table 11

EAS Difference Scores and Peer Group Characteristics

	<u>Peer College Ort.</u> (n = 95)	<u>Peer Delinq.</u> (n = 59)	<u>Peer Popularity</u> (n = 89)
Sociability	-.02	-.07	.01
Activity	-.01	-.00	-.05
Emotionality	-.02	.09	-.03
Fear	.18*	.00	.04
Anger	.19*	.14	-.03

Note. Ort. = Orientation, Delinq. = Delinquency.

*p<.05.

Most of the 55 correlations in tables 9, 10, and 11 were weak and non-significant. Of these, five significant correlations across areas accounted for only 1% to 20% of the variance in the personality difference scores (Ozer, 1985). In the absence of any substantial statistically significant correlations, multiple regression analyses seemed inappropriate.

DISCUSSION AND CONCLUSIONS

As was indicated in the results section, the means and standard deviations for each of the measures utilized in this study were consistent with both normative samples and prior samples (Daniels, 1986; Buss & Plomin, 1984; Daniels & Plomin, 1985). These data indicate that the present sample did not differ appreciably from that of prior studies.

Results relevant to personality resemblance indicated that these siblings tended to describe themselves as more similar than dissimilar even though the relationships were generally weak and statistically non-significant. In magnitude these intersibling correlations resembled those presently reported in the literature (Daniels & Plomin, 1987; Scarr & Grajek, 1982; Dixon & Johnson, 1980). Thus, the findings in this study are consistent with other research examining sibling resemblance. The specific finding that females described themselves as more fearful and sociable than males was also previously reported (Daniels, 1986). Gender related differences between males and females on variables that have been traditionally associated with one sex versus the other were not surprising given this society's differences in the socialization of males and females.

It was hypothesized that constellation variables would account for 1% to 10% of the variance in personality

difference scores. The present findings did not support this hypothesis. This result was inconsistent with findings by other researchers who suggested that these variables explain very little of the variance associated with intersibling dissimilarity. Results indicated that gender, age, and birthorder combined accounted for 1% to 38% of the variance in personality difference scores.

This difference in variance estimates is apparently an artifact of statistical methodology used to derive such estimates. It appears that Daniels (1986) used squared correlations to estimate the variance accounted for in her study. The present study employed estimates representing the actual size of the Pearson correlations. This method was preferred based on an article by Ozer (1985) which suggested that using the squared correlations as estimates of variance could underestimate the amount of variance in research where the actual correlation coefficient might better explain the significance of the relationship between the variables.

It had been predicted that the SIDE measure would account for much more of the variance in personality difference scores than would the constellation variables. This hypothesis was also rejected. Most of the present correlations between the SIDE scales and personality difference scores were weak and nonsignificant. This

finding suggests that the non-shared environment factors examined in this study were largely unrelated to intersibling personality differences. This finding is also inconsistent with other research in this area.

A number of explanations may account for non-shared environmental factors being poor predictors of intersibling personality dissimilarity. Since the SIDE instrument was developed for junior and senior high school students, it is possible that it was not fully appropriate for this sample. However, SIDE's developers indicated that it could be used with older siblings as long as respondents were instructed to base their responses on a certain time period when they were living at home. Although this procedure was adhered to in this study, perhaps being physically removed from the home environment may have made it difficult for participants to accurately recall various aspects of their home experiences. Although this explanation lacks direct support, it seems compatible with correlations between siblings' SIDE responses. Intersibling correlations were generally low to moderate ($-.07$ to $-.56$), indicating weak to moderate agreement.

It is also possible that there may be events which occur specific to the individual that could better explain the obtained degree of intersibling similarity observed. Similar events which occur in the same home environment and

community may impact one sibling differently than another and mediate differences in personality development. Thus, future research in this area should utilize instruments that more closely examine the extent to which experiences unique to the individual that may be related to personality development. The exploration of such factors does not imply that the SIDE inadequately assesses non-shared environmental factors; perhaps both types of variables play a significant role in understanding intersibling personality dissimilarity.

Just as instruments assessing environmental influences on personality development need refining, the manner in which personality was conceptualized and assessed in the present study may also be in need of refinement. The EAS Inventory was used to operationalize the concept of personality in this study because these variables were thought to be present as early as infancy and remain relatively stable throughout development. Perhaps personality style does not remain stable, but changes with experiences and subsequent development. Future research examining a wider range of variables may help clarify the nature of personality development beyond infancy and childhood.

In conclusion, even though the constellation variables were more strongly related to personality difference scores

than was SIDE, this does not imply that these are the only variables that account for variation in personality dissimilarity. Since genetic contribution was not controlled in this study, it cannot be concluded that these findings were not mediated by genetic influence. Despite the fact that causation cannot be inferred from these data, the significant relationships that were obtained with constellation variables suggest that the latter variables may be more important than previously assumed. While the current investigator is unlikely to further explore this area beyond this study, those interested in future research might do well to explore theories which provide a more integrative approach with the expectation that such theories might provide a better understanding of intersibling personality development.

APPENDICES

APPENDIX A

Personal Data Sheet

APPENDIX A
Personal Data Sheet

Name: _____

Address: _____

City: _____ **State:** _____

Zip Code: _____

Date of Birth: _____ **Sex:** _____

Ethnic/Racial Background: _____

Your Birth Order in family (i.e. 1st born, 2nd born, etc.): _____

Is your sibling: _____

Biological related: **yes** **no**

Adopted: **yes** **no**

Half: **yes** **no**

Step: **yes** **no**

Foster: **yes** **no**

Number of additional siblings: _____

Please indicate the highest grade or degree completed for each parent:

Mother: _____

Father: _____

APPENDIX B

Statement of Informed Consent

APPENDIX B

Statement of Informed Consent

I understand that:

- I. If at any point I begin to feel uncomfortable about participating, I can discontinue my participation.
- II. The study that I am participating in is designed to explore the nature of sibling interaction and personality styles.
- III. The study requires me to attend one lab sessions where I will complete three questionnaires and personal data inventory. My responses to the questions will be treated confidential and I will remain anonymous as results are discussed. I may also obtain information regarding the results of my participation, if requested.
- IV. My sibling will be mailed the same questionnaires to be completed. My credit for participation, however, will not be based on whether or not my sibling returns the questionnaires.
- V. I am not to discuss the manner in which I responded to the questions with my sibling or other students.

Subject Signature _____

Date _____

APPENDIX C

Form Letter

APPENDIX C

Form Letter

Dear :

As a part of a project I am participating in at MSU, I need you to complete and return the enclosed questionnaires as soon as possible. I have already completed a copy of the questionnaires, but my responses cannot be evaluated unless you also complete the questionnaires. There is a statement of informed consent you must read and sign. If there are any questions you do not understand, please leave them blank. You should complete the questionnaires without assistance from anyone. After they are complete, please mail them back in the self-addressed stamped envelope as soon as possible.

Thanks!!!!

(Form Letter for Minors)

Dear :

As a part of a project I am participating in at MSU, I need you to finish and mail back the enclosed questionnaires. I have already finished a copy of the questionnaires, but my answers can not be checked unless you also complete the questionnaires. There is a permission statement enclosed that you and mom or dad must read and sign before completing the questionnaires. If there are any questions you do not understand, please leave

them blank. You should complete them without help from anyone. After they are complete, please mail them back in the self-addressed stamped envelope as soon as possible.

APPENDIX D

Mailed Statement of Informed Consent

APPENDIX D

Mailed Statement of Informed Consent

I understand that:

- I. If at any point I begin to feel uncomfortable about participating in the study, I can discontinue my participation.
- II. If I am under the age of 18 I must have one of my parents sign this consent form.
- III. The study in which I am participating in is designed to elicit information about sibling interaction and personality styles.
- IV. This study requires me to complete three questionnaires and one personal data inventory.
- V. These questionnaires should be completed without soliciting help from my sibling who has also completed the questionnaires or my parents. Any questions that are not understood should be left blank.
- VI. That my participation is voluntary and no penalty will be imposed upon my sibling if I choose not to participate.
- VII. Results of the study can be obtained if requested.

Participant's Signature _____

Date _____ Parent's Signature (if a minor) _____

APPENDIX E

Debriefing Note

APPENDIX E

Debriefing Note

The study in which you have participated was designed to better understand factors associated with personality dissimilarity between siblings. Currently, most of the research indicates that siblings from the same family tend to develop very dissimilar personality styles. Some argue that this is basically due to genetic factors, while others argue that dissimilarity is due to environmental factors. Undoubtedly, both factors influence personality development, however; it would be very beneficial to research on personality development to determine which of the two factors have the greatest impact on development.

APPENDIX F

Social Desirability as it Relates to EAS & SIDE Scales

APPENDIX F

Social Desirability as it Relates to EAS & SIDE Scales

Table 3

EAS Inventory & Marlowe-Crowne Correlations

<u>Variables</u>	<u>Sibling A</u>	<u>Sibling B</u>
Sociability	.09	.02
Activity	-.05	-.02
Fear	-.02	-.25**
Emotionality	-.01	-.23*
Anger	.11	-.08

Note. Sibling A = University resident sibling and Sibling B = non-University resident sibling.

*p < .01.

**p < .005.

Table 4

SIDE Scales & Marlowe-Crowne Correlations

<u>SIDE Scales</u>	<u>Sibling A</u>	<u>Sibling B</u>
Sibling Antagonism	.12	-.08
Sibling Caretaking	-.04	.02
Sibling Jealousy	.01	-.05
Sibling Closeness	-.05	.01
Maternal Affection	-.22**	-.12
Maternal Control	.08	.19*
Paternal Affection	.17*	.14
Paternal Control	.01	.13
Peer College Orientation	-.11	-.03
Peer Delinquency	.21	.09
Peer Popularity	.11	.03

Note. *p < .05.

*p < .01.

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