The European Proceedings of
Social and Behavioural Sciences
EpSBS

www.europeanproceedings.com
e-ISSN: 2357-1330

DOI: 10.15405/epsbs.2020.11.02.22

PSYRGGU 2020

Psychology of Personality: Real and Virtual Context

PARENTAL DIFFERENTIAL TREATMENT OF SIBLINGS AND SIBLING DIFFERENCES IN INTELLIGENCE

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Abstract

The current study examined whether IQ differences between older and younger siblings related to the differences in parent-child relations. The Sample consisted of 291 two-child families. Mean age of the fathers 45.53, SD= 5.25, range: 35–61; mothers 43.20, SD= 4.27, range: 33–54. Intrapair age differences between siblings were not more, than 6 years. The age of the older sibling was 11–23 (M= 18.03, SD= 2.29): of the younger sibling 7–18 (M= 14.50, SD= 2.40). Mothers and fathers of siblings were asked to complete the 60-item Questionnaire of Child-Parent relationship, which was designed to assess 10 descriptive scales and 5 factor scales. Intelligence of siblings was assessed in 83 families through normalized scores of Wechsler tests (WISC or WAIS–III). The general factor of parent-child relations (GFR) was assessed as the unrotated first principal factor in the item-based and scale-based factor analysis. GFR is defined by the factors of parent-child relations connected with satisfaction – dissatisfaction with the relationship, acceptance – rejection of the child, and the degree of emotional closeness and trust. A positive GFR score means that the parents are generally satisfied with their relationship with their child and consider it well-balanced and free of conflict. When plotting siblings' verbal, performance, and general intelligence against GFR scores, no significant correlation was observed. Differential treatment by fathers and, to a lesser degree, by mothers, reveals a small significant correlation with the IQ differences between siblings.

Keywords: Child-parent relations, general factor of child-parent relations, psychometric IQ.

https://doi.org/10.15405/epsbs.2020.11.02.22
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Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. Introduction

Theoretical analysis of the sibling method, its potential, and resolution capability for studying the reasons for similarity and differences between siblings has only begun in the late 1980s, despite a century-old history of sibling research. This new focus on the sibling method stems from the recognition of the significance of non-shared environments for shaping the individual differences in a wide variety of psychological characteristics.

In the late 1980s, Plomin and Daniels (1987) summarized the psychogenic studies that had been conducted in the prior fifteen years and concluded that a significant amount of the non-genetic variability of psychological traits can be attributed to the individual non-shared environment. The assumption is that shared environmental factors such as the social and economic status, which undoubtedly display their influence when comparing children from different families, do not show influence (or show almost no influence) on the similarity between children in the same family. Subsequent studies have corroborated this conclusion (e.g. Jensen & McHale, 2017; Plomin et al., 2016).

From this point, psychogenic studies, while conducting a formal evaluation of the environmental components of phenotypic dispersion, also begin to qualitatively investigate the environment. Assuming that the non-genetic variability of psychological traits is generally attributable to the individual, not the common environment, Plomin et al. (1994) insisted on investigating this individual environment (Reiss et al., 1994). The goal of these studies was defined as the identification of the developmental conditions specific to each child. This research served as fertile ground for a wide range of experimental lines of research investigating the individual environment in developmental psychology. Of all such individual environmental conditions, the most crucial is the differential parental treatment (Dunn & McGuire, 1994).

2. Problem Statement

When investigating the correlation between intelligence and differential parental treatment, there is a certain disparity regarding the level of generality of the compared characteristics. The variability of the most general cognitive traits (cognitive abilities, verbal, performance and general intelligence) is compared to certain measures of the parent-child relations that are varied, but significantly more individualized manifestations of parental behavior.

When selecting measures whose variability is not reduced to overly specific aspects of family relationships, we propose drawing a parallel with the General Factor of Personality.

The General Factor of Personality is at the highest level of the hierarchic model of personality, similarly to the g factor being a cognitive characteristic of the highest order. Studies of the General Factor of Personality have been conducted using a number of questionnaires intended for personality diagnostics and used in exploratory factor analysis (as a rule, it is considered to be the first unrotated factor from principal components analysis) as well as confirmatory factor analysis.

The General Factor of Personality is associated with a general positive attitude and a constructive approach, as well as ease and efficiency in interpersonal relationships. The feeling of general well-being and satisfaction with life shows a correlation of 0.7 with GFP (Musek, 2007; Rushton & Irwing, 2011).

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Empirically, GFP was identified in 2007 (Musek, 2007, 2017). However, significantly earlier (Rushton, 1985, 1990), the possibility of general factor was discussed in the context of evolutionary psychology. A common factor present in various personality traits can presumably be the result of reproductive strategies of romantic, spousal and parental relations, which, consequently, means that personality traits could be subject to natural selection in the course of evolutionary processes.

The idea of identifying the common factor uniting different personality traits while investigating the reasons for variability has found support in the investigation of deviations. In particular, clinical research has isolated the general psychopathology factor. The assumption is that an investigation of the relationship between the general psychopathology factor with the assumed sources of the pathology will explain the high degree of comorbidity, as well as locate the single sources (genetic, neurological) at the basis of various disorders (Carragher et al., 2016; Caspi et al., 2014; Hyland et al., 2018; Waldman et al., 2016).

3. Research Questions

We propose identifying the General Factor of the Parent-Child Relationship (GFR) by using the items and scales of the Parent-Child Relationship Questionnaire. We also hypothesize that the general index of child-parent relations will have a higher resolution capability for an analysis of the interdependencies between intelligence and parent-child relations, than more particular indicators.

4. Purpose of the Study

The current study examined whether IQ differences between older and younger siblings related to the differences in parental attitudes to siblings and to parental differential treatment.

5. Research Methods

5.1. Participants

Participants of the study were 291 two-child families. Mean age of the fathers 45.53, SD= 5.25, range: 35–61; mothers 43.20, SD= 4.27, range: 33–54. Intrapair age differences between siblings were not more, than 6 years. The age of the older sibling was 11–23 (M= 18.03, SD= 2.29): of the younger sibling 7–18 (M= 14.50, SD= 2.40).

5.2. Methods

Mothers and fathers completed the self-administered Parent-Child Relationship Questionnaire. The Questionnaire is designed to measure ten variables, obtained on the basis of experts assessment of the content of the questionnaire items (Exactingness, Severity, Control, Emotional Closeness, Acceptance, Cooperation, Concordance, Consistency, Parental Authority, Relationship Satisfaction) (Markovskaya, 2006), and five scales obtained as a result of factorization (Parental Positive Relations with Child, Control, Leniency, Inconsistency and Confidence) (Alekseeva & Kozlova, 2010). Parents rated their relations with first-born and second-born sibling separately using a 5-point scale ranging from 1 (absolutely not) to 5 (absolutely yes).

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In 83 families there was assessed psychometric IQ of siblings. Depending on age of the participants IQ was measured either with Russian WISC or WAIS–III (with further normalization).

6. Findings

The study was conducted in two stages. First, the GFRs for the parents were obtained based on the responses to the Parent-Child Relationship Questionnaire. Then, the GFRs were compared to sibling IQ scores.

6.1. GFR was assessed as the unrotated first principal factor in a factor analysis. Subject to factor analysis were 1) all 60 questionnaire items 2) 10 questionnaire scales, isolated based on a quality analysis of the questionnaire's contents, 3) 5 scales obtained during factor analysis of the questionnaire. Thus, three GFR indicators were obtained.

When factor analysis was applied to the 60 questionnaire items, the unrotated first principal factor explained 18**.**6% of common variance. 34 items of 60 had factor loadings over .40. Table 1 contains 11 items with the highest factor loadings. As can be seen from the content of the items, the first factor involves the characteristics of the parent-child relationship defined by the acceptance of the child by the parent and leading to satisfaction with the relationship. GFR does not represent the characteristics of the relationship that are marked by controlling behavior (control – autonomy), the degree of demandingness, and the degree of strictness.

Table 01. Items of the Parent-Child Relationship Questionnaire with factor loadings >.59

Items	Factor loadings
23. I believe I'm a figure of authority for him (her).	.64
24. I like our relationship	.76
30. I believe I understand him (her).	.64
31. I would like to change many things about him (her). (R)	–.63
36. I believe that, in general, I'm raising my son (daughter) well.	.60
42. I like his (her) temper.	.66
45. He (she) and I disagree on very many issues (R)	–.67
47. (S)he shares the majority of my views.	.60
54. I welcome his (her) behavior.	.71
55. I frequently express my dissatisfaction with him (her). (R)	–.60
60. I want him (her) to always have the same feelings for me as (s)he does now	.70

Note: R – reversion of polarity

As during factor analysis of the questionnaire items, factor analysis of the 10 descriptive questionnaire scales showed the first factor as being defined, first and foremost, by the satisfaction with the relationship and mutual acceptance of the parent and child (Table 2). Unrotated first principal factor explained 34% of common variance.

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Table 02. Descriptive scales of the Parent-Child Relationship Questionnaire and their factor loadings

Descriptive scales	Factor loadings
4. Emotional Closeness	.75
5. Acceptance	.76
6. Cooperation	.76
8. Consistency	.56
9. Parental Authority	.70
10. Relationship Satisfaction	.83

Factor analysis of 5 questionnaire scales (i.e. determination of second order factors) had the first principal factor explaining 36% of common variance. High loadings in the factor were displayed by the scales Positive Relations with Child (.89) and Confidence (.88).

Thus, General factors of parent-child relations, obtained in the three ways were in agreement: they all included parental treatment factors relating primarily to acceptance – rejection and did not include factors relating to the variability of disciplining methods. The positive pole of GFR can be viewed as the maximal possible harmony in parent-child relations. Parents like their child, they feel closeness to the child and assume that the child returns the feeling.

6.2. Indicators of parent-child relations obtained based on the three versions of GFR were compared to the scales of verbal, performance, and general sibling intelligence. The parental treatment of a child (GFR indicators) and the child's intelligence were shown to be correlated only in one case: the more the mother accepts the youngest child, the higher its verbal intelligence. The correlation between the father's treatment and the younger child's intelligence were demonstrated to show a paradoxical relationship: the verbal, performance, and general intelligence of the younger sibling is correlated with the father's treatment of the older sibling. The more the father accepts the older sibling, the lower the intelligence of the younger sibling. Correlation coefficients do not exceed .31, with significance on the level of $0.7 < p < 0.1$.

No significant correlations were discovered between the treatment of the older sibling (mother's and father's GFR) and its intelligence.

6.3. The testing of the hypothesis about the influence of differential parental treatment on the differences between siblings' intellectual abilities was carried out by two methods.

1. There were compared relative differences in IQ and in child-parent relations: The differences between the parents' treatment of the older and the younger sibling (GFR_1–GFR_2) and the differences between the siblings' verbal, performance, and general intelligence (VIQ_1–VIQ_2; PIQ_1–PIQ_2; IQ_1–IQ_2, respectively). To evaluate the relation between two types of variables, we used Spearman's rank correlation coefficients (Table 3).

2. The second method for evaluating the differences involved not the relative difference between the older and the younger sibling, but rather the absolute value of the differences; i.e., the absolute values of the same differences were used as the indicators of differential treatment and differences in intelligence. Table 4 demonstrates the Spearman's rank correlation coefficients thus obtained.

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Table 03. The correlation between differential parental treatment and the differences in intelligence between siblings

$GFR_1–GFR_2$	Parent	$VIQ_1–VIQ_2$	$PIQ_1–PIQ_2$	$IQ_1–IQ_2$
GFR derived from 60 items	Fathers	.475*	.085	.188
	Mothers	.272*	.063	.119
GFR derived from 10 scales	Fathers	.326*	.269*	.361*
	Mothers	.237	.182	.244
GPR derived from 5 scales	Fathers	.265*	.232	.308*
	Mothers	.225	.181	.234

Note: * Significant at the .01 level

Table 04. The correlation between differential parental treatment and the differences in intelligence between siblings (absolute values)

$\|GFR_1–GFR_2\|$	Parent	$\|VIQ_1–VIQ_2\|$	$\|PIQ_1–PIQ_2\|$	$\|IQ_1–IQ_2\|$
GFR derived from 60 items	Fathers	.278*	.266*	.267*
	Mothers	.027	.191	.124
GFR derived from 10 scales	Fathers	.261*	.205	.321*
	Mothers	.059	.171	.056
GPR derived from 5 scales	Fathers	.256	.304*	.259
	Mothers	–.044	.103	.083

Note: * Significant at the .01 level

In the results detailed in Table 3, we see that, first of all, all the correlations are positive: the more the parents are satisfied with the older sibling, the higher its intelligence. This is especially true for the correlations between the differential treatment and the verbal intelligence differences. When comparing the absolute values (see Table 4), we see a similar result, which is, however, less pronounced and displayed only in the correlations between intelligence and the father's differential treatment. The correlations for the mothers, which were low enough to begin with, approach zero. Secondly, differential treatment by the father shows a closer correlation with the differences in siblings' intelligence than differential treatment by the mother (Table 3), which is also true when comparing the absolute values of differences (Table 4). Thirdly, the methods for defining GFP (item- or scale-based) do not seem to considerably differ in terms of the results.

7. Conclusion

The General Factor of Parent-Child Relationship obtained in this study was used for investigating the correlation between differential parental treatment and differences in siblings' intelligence. GFR is defined by those factors of parent-child relations that address satisfaction – dissatisfaction with the relationship, acceptance – rejection of the child, and the degree of emotional closeness and trust. A positive GFR value means that the parents are generally satisfied with their relationship with their child and view it as well-balanced and free of conflict.

GFR has shown virtually no correlation to the degree of intelligence in older and younger siblings; however, the differences in intelligence between the oldest and youngest child were shown to be correlated, to a certain degree, with differential treatment by the father and showed a tendency to be correlated with differential treatment by the mother.

Acknowledgments

The study was supported by the Russian Foundation for Basic Research, project 19-013-00274 Spouse, child-parent and sibling relationships: An actor-partner interdependence model.

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