

PAPER**PSYCHIATRY & BEHAVIORAL SCIENCES***Gülümser Gültekin Akduman,¹ Ph.D.*

A Study on the Depression Levels of Children who are Brought to the Forensic DNA Laboratory for Paternity Testing

ABSTRACT: This study aims to identify the depression levels of children who were brought to the forensic DNA laboratory for paternity testing. A total of 35 such children were enrolled in the study. Data were gathered using the parent interview form, general information form for children, and the “Child Depression Scale” as it had been tested for validity and reliability in the 6–17 year age group in the country. Data were analyzed using one-way analysis of variance and Scheffe test. The results showed that the age of children who were brought in for paternity testing created a meaningful difference in their depression scores ($p < 0.01$) while gender did not. In addition, *c.* 63% of the children in this study did not know why they were in the laboratory, which also caused a meaningful difference in depression scores ($p < 0.01$).

KEYWORDS: forensic science, DNA analysis, paternity testing, child depression, child psychology, child rights

The doubt of a father about whether he is the biological parent of a child is a critical situation that affects the family members as well as the overall family structure. Various arrangements have long been made to solve this problem, which also involves a social aspect. Several scientific methods have been used in an attempt to identify a possible genetic link between a man and a child (1–10). Even though it is debatable whether paternity can be reduced to the mere existence of a genetic link between a man and a child, its establishment may sometimes present a legal, social, and psychological disposition. In case of an individual doubt by a woman, man, or child about biological ties, or in cases when the establishment of genetic linkage is legally necessary, individuals may pursue DNA analyses with the guidance of their doctors, lawyers, or courts. Even though it may be a proper approach to use a scientifically sound and globally accepted method in the solution of a problem as serious as kinship identification, it should be remembered that the lives of all parties change both before and after the test. Substantial changes in family life are inevitable once the test results are obtained, regardless who asked for paternity testing and with what aims. Children are without a doubt included in this group that is affected by these changes.

Depression is a mood disorder characterized by profound feelings and thoughts of sadness, inertia, worthlessness, weakness, unwillingness, unhappiness, and pessimism and can be accompanied by physical symptoms such as slow speech and movement, loss of appetite, sleeplessness, constipation, pains and aches, and suicidal thoughts and attempts (11). Depressive disorders, which include major depressive disorder (unipolar depression), dysthymic disorder (chronic, mild depression), and bipolar disorder (manic

depression), can have far reaching effects on the functioning and adjustment of young people. Among both children and adolescents, depressive disorders confer an increased risk for illness and interpersonal and psychosocial difficulties that persist long after the depressive episode is resolved; in adolescents, there is also an increased risk for substance abuse and suicidal behavior. Signs of depressive disorders in young people often are viewed as normal mood swings typical of a particular developmental stage. In addition, health care professionals may be reluctant to prematurely “label” a young person with a mental illness diagnosis. Yet, early diagnosis and treatment for depressive disorders are critical to healthy emotional, social, and behavioral development (12–14). Symptoms of major depressive disorder common to adults, children, and adolescents include persistent, sad, or irritable mood, loss of interest in activities once enjoyed, significant change in appetite or body weight, difficulty sleeping or oversleeping, psychomotor agitation or retardation, loss of energy, feelings of worthlessness or inappropriate guilt, difficulty concentrating, and recurrent thoughts of death or suicide. Five or more of these symptoms must persist for 2 or more weeks before a diagnosis of major depression is indicated (15). Epidemiological studies have shown that depression affects 0.3–1.4% of preschoolers, 1–2% of preadolescents, and 3–8% of adolescents; is the most prevalent health problem in adolescence; and is associated with the loss or divorce of parents, neglect or abuse, exposure to or witnessing family violence, lack of parental support, academic failure, and low GPA (16–23). Depressed children and adolescents define their families as conflictual, excluding and unsupportive, and as the conflict within a family increases so does the risk of depression and its recurrence (24–29).

Before planning the study, a comprehensive literature survey was conducted. When studies about paternity testing were reviewed, it was seen that the majority focused on the technical aspects of the analysis and consisted of cases; however, the social and psychological aspects regarding parents and especially the children involved

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were not studied. On the other hand, many studies about childhood depression seemed to treat family relationships as one of the most important factors. No studies could be found regarding children who are taken for paternity testing. Therefore, this study is expected to fill this niche and contribute to the literature. The study does not aim to diagnose children taken in for paternity testing with depression, but to consider the scores obtained from the scale that complement the clinical diagnosis, draw attention to the outcomes, and emphasize the need for psychiatric evaluation for these children and the importance of giving them support.

Materials and Methods

Participants were 35 children who were brought to the forensic DNA laboratory in Ankara University Medical School's Division of Forensic Medicine for paternity testing between January 1, 2006 and April 1, 2008. Even though Turkish youth become majors at the age of 18, the study involved 6- to 17-year-olds as there were no applications by 18-year-olds in the indicated study period. Data were gathered using the parent interview form that consists of open-ended questions, general information form for children, and the "Childhood Depression Scale" developed by the researcher. The interview form for mothers included items about mothers' age, educational background, whether the child has doubts about his father, if yes for how long, whether they were subjected to family violence, whether paternity testing was mentioned to their children, their future plans in line with the test results, and whether they received psychological help and counseling regarding the test. The responses were recorded. As no mother mentioned children's doubts about their father, this information was not included in the table. Similarly, the interview form for fathers involved fathers' age, educational background, whether they were subjected to family violence, their reasons for having paternity testing, how long they have had doubts about paternity, whether paternity testing was mentioned to their children, their future plans in line with the test results, and whether they received psychological help and counseling regarding the test. As no father mentioned being exposed to family violence, this information was not included in the table. The general information form for children included questions about their age, gender, and whether they knew why they had been brought to the laboratory, which were asked to the parents. The "Childhood Depression Scale," on the other hand, can be implemented on children aged between 6 and 17 years as a self-assessment scale (30,31). It is completed by being read out to children or by children reading it themselves. The scale consists of 27 items and three different alternatives for each of them. To screen for child's current depressive episodes, the child is asked to choose the statement that has been appropriate for himself within the last 2 weeks. The responses are scored between 0 and 2. The overall depression score is calculated by adding these points. The highest score possible on the scale is 54. A higher overall score indicates a higher depression level or intensity. The scale has been tested for validity and reliability in Turkey and the pathological cut-off point was identified as 19 (32). The Child Depression Scale is used in Turkey not to make a diagnosis of depression but to support clinical diagnosis. Thus, a pathological cut-off point was identified in this scale and those who score over 19 were taken to be a risk group for depression. In Turkey, DSM-IV-TR is used for a diagnosis of depression.

In the data collection stage, the parents and children who arrived for paternity testing were taken to separate rooms. While the children were playing in the play room, parents were given information about the study, they were guaranteed anonymity, and their verbal consent was obtained for interviews and for implementing the

questionnaire on their children. The majority of parents agreed to participate in the study provided that the information obtained from them would not be associated with their children's test results. The researcher explained that the information obtained from them would not be compared statistically with their children's test results; however, this information might be used in the discussion. After parents agreed to participate in the study under these conditions, fathers were interviewed and their responses were recorded while mothers spent time with their children in the play room. Afterward, mothers were interviewed and their responses recorded while fathers were in the play room. Before interviewing children, information about their age, gender, and whether they knew why they were in the forensic DNA laboratory were obtained from their parents and recorded in the general information form. Afterward, children were contacted individually to give brief information about the study and implement "Child Depression Scale." They were told that they would remain anonymous and allowed to ask questions about the study. After all data were gathered, they were analyzed using SPSS 15.00 (SPSS Inc., Chicago, IL) (33).

Results

Findings of the study are presented in tables below. As parents did not allow the association of data they provided with their children's test results, data obtained from them were given in *n* and % values, and children's scores were analyzed with respect to age, gender, and whether they knew why they were in the laboratory.

Table 1 shows that the majority of mothers were aged between 26 and 31 (37.1%) and high school graduates (57.1%). Only 5.72% of mothers were not subjected to family violence, while others and/or their children were found to experience physical or verbal

TABLE 1—Findings obtained from interviews with mothers.

	<i>n</i>	%
Mother's age		
20–25	4	11.4
26–31	13	37.1
32–37	6	17.1
38+	12	34.3
Educational status		
Literate and elementary education graduate	3	8.6
High school graduate	20	57.1
University graduate	12	34.3
Violence in the family		
My husband subjects only me to physical violence	3	8.6
My husband subjects only my child to physical violence	4	11.4
My husband subjects both me and my child to physical violence	4	11.4
My husband subjects only me to verbal violence	8	22.9
My husband subjects only my child to verbal violence	7	20.0
My husband subjects both me and my child to verbal violence	7	20.0
We don't have violence in the family	2	5.7
Do you think that children should know the reasons for paternity testing?		
Yes, if they are old enough to understand	1	2.9
No, never	34	97.1
Future plans depending on test results		
I will seek divorce	16	45.7
I will justify myself and continue my marriage	15	42.9
I will encourage my husband to see a psychiatrist	4	11.4
Support and counseling when deciding on the test		
Yes	1	2.9
No	34	97.1

violence at home from their spouses. It is worth noting that 97.1% of the mothers believed that children should not be told why paternity testing was necessary and did not receive psychological support. After the test results were established, 45.7% of the mothers said they would seek divorce, 42.9% said they would clear themselves and continue their marriage, and 11.4% said they would encourage their husband to see a psychiatrist as he has problems.

As shown in Table 2, the majority of fathers were aged between 26 and 31 (34.3%) and high school graduates (48.6%). In the study, receiving pressure from the extended family for paternity testing or an anonymous telephone call about paternity was grouped under the name environmental reasons. On the other hand, children's blood type and lack of physical resemblance to fathers were grouped under the name child-related reasons; mother's statement that the child does not belong to her spouse during a quarrel was grouped under the name mother's statement; and pregnancy despite the use of contraceptives and mother's wish to justify herself were grouped under the name other reasons. It was found that 22.9% of the fathers opted for the test for environmental reasons and another 22.9% because of mother's statement. A total of 62.9% of fathers stated that children should only be told the truth about paternity testing if they are old enough to understand it, and 97.1% did not receive psychological help. As for future plans, 22.9% of the fathers stated they were going to seek divorce; 14.3% stated that they would continue the marriage if the child belongs to them; 20% said their relationship with the children would not change regardless of the test result; and 42.9% were undecided.

Table 3 shows that the age of children brought for paternity testing created a meaningful difference in their depression scores ($F_{2,34}: 43.50, p < 0.01$). While the depression score of 6- to 9-year-old children was 12.53 ± 3.92 , that of 10- to 13-year-olds was

TABLE 2—Findings obtained from interviews with fathers.

	n	%
Father's age		
20–25	4	11.4
26–31	12	34.3
32–37	6	17.1
38+	13	37.1
Educational status		
Literate and elementary education graduate	5	14.3
High school graduate	17	48.6
University graduate	13	37.1
Reason for paternity testing		
Environmental reasons	8	22.9
Child-related reasons	6	17.1
Mother's statement	8	22.9
Other	7	20.0
Not stated	6	17.1
Duration of experiencing doubt		
0–1 months	14	40.0
1–3 months	12	34.3
3 months–1 year	4	11.4
Longer than 1 year	5	14.3
Do you think that children should know the reasons for paternity testing?		
Yes, if they are old enough to understand	22	62.9
No, never	13	37.1
Future plans depending on test results		
I will seek divorce regardless of the test results	8	22.9
I will continue my marriage if the child belongs to me	5	14.3
My relationship with my child will stay the same regardless of the test results	7	20.0
Undecided	15	42.9
Support and counseling when deciding on the test		
Yes	1	2.9
No	34	97.1

22.50 ± 2.45 , and that of 14- to 17-year-olds was 24.13 ± 2.85 . The Scheffe test revealed that the difference between children aged 6–9 and 14–17 was meaningful. An examination of the mean scores showed that as children undertaking paternity testing became older, their depression scores increased and that children aged between 10 and 17 exceeded the pathological cut-off point of 19 on the scale.

As shown in Table 4, the gender of children who took a paternity test did not cause a meaningful difference in their depression scores ($F_{1,34}: 2.06, p > 0.05$).

When Table 5 is examined, it can be seen that knowing why they are taken for paternity testing creates a meaningful difference in children's depression scores ($F_{1,34}: 22.54, p < 0.01$). Those who knew the reason behind paternity testing had a higher mean

TABLE 3—Depression scores of children taken for paternity testing by age group.

Group/Age	n	Depression Scores X ± SD	
6–9	19	12.53 ± 3.92	
10–13	8	22.50 ± 2.45	
14–17	8	24.13 ± 2.85	
Total	35	17.46 ± 6.41	
Analysis of variance results			
	df	F	p
Between groups	2	43.50**	0.00
Within groups	32		
Total	34		

df, degree of freedom; SD, standard deviation; X, arithmetical mean.
** $p < 0.01$.

TABLE 4—Depression scores of children taken for paternity testing by gender.

Group/Gender	n	Depression Scores X ± SD	
Girls	18	18.94 ± 6.71	
Boys	17	15.88 ± 5.86	
Total	35	17.46 ± 6.41	
Analysis of variance results			
	df	F	p
Between groups	1	2.06	0.16
Within groups	33		
Total	34		

df, degree of freedom; SD, standard deviation; X, arithmetical mean.

TABLE 5—Depression scores of children taken for paternity testing with respect to knowing the reason why they are in the laboratory.

Knowing the Reason	n	Depression Scores X ± SD	
Yes	13	22.69 ± 3.97	
No	22	14.36 ± 5.26	
Total	35	17.46 ± 6.41	
Analysis of variance results			
	df	F	p
Between groups	1	22.54**	0.00
Within groups	33		
Total	34		

df, degree of freedom; SD, standard deviation; X, arithmetical mean.
** $p < 0.01$.

depression score than those who did not know, and the score exceeded the pathological cut-off point of 19 on the scale.

Discussion

In the interviews, 94.28% of mothers stated that their spouses exerted physical and/or verbal violence on them or their children. Almost all mothers stated that paternity testing should be performed secretly, without telling the children. The rate of mothers who said they would seek divorce or clear their names and carry on with their marriage was similar, whereas a small number of mothers stated that their spouses had psychological problems and they would encourage them to see a psychiatrist after the test. Most fathers opted for the test for environmental reasons and because of the mother's statement, and, unlike mothers, most believed that children who are old enough should be told the purpose of the test. It was noted that the majority of the fathers were undecided about what direction to take after the test and their future plans. It was also found in this study that only one couple was receiving psychological help together. A previous study (34) about paternity testing reports that a positive test result contributes to the establishment of a true father-child relationship that was not possible earlier because of doubt. This study argues that, in most cases, the fathers who agreed that paternity testing should always be subject to the permission of both parents did not actually have doubts about whether the child belongs to them, but rather they opted his spouse for the test to avoid material and moral responsibility, to earn time, and to humiliate his spouse (34). On the other hand, the relationship between a man who thought he was the biological father of a child but tested negative was shown to generally worsen and even end. Only few men were able to maintain a close relationship with children after finding out that a biological tie did not exist (35). Information obtained from parents in the study is only mentioned to give an idea about the home environment of the children. It is a significant finding that 94.28% of mothers and/or their children experienced physical or verbal violence at home. Previous studies have shown that conflict and violence experienced at home between family members affect children's psychology negatively (36-42) and that a strong relationship exists between these children's depression levels and conflict, tension, and violence in the family (11,38,43-47).

This study revealed that the age of children who were taken for paternity testing created a meaningful difference in their depression scores; those aged between 10 and 17 scored higher than the pathological cut-off point of 19; and children's gender did not cause a meaningful difference in the depression scores. The group aged between 10 and 17 covers adolescence, which is a period of transition from childhood to adulthood and involves biological, psychological, mental and social development, and maturity. This period is also one of confusion and increased psychological problems when compared to childhood. Depression is one these problems (48). Certain studies have shown that 25% of all depression throughout life originates from adolescence; the prevalence of depression increases with age in adolescence (19,48-50); and children from broken and conflicting families are at a higher risk of psychological problems and depression than those in a healthy family environment (51-55). Having doubts about a spouse or paternity indicates problems with a man's trust for his wife and his marital happiness. Such deterioration in family relations may cause a rather difficult and painful process for both parents and children. Coupling the confusion of adolescence with this difficult and painful process may have caused higher depression scores in these children.

It was also noted in this study that knowing why they are in the laboratory creates a meaningful difference in children's depression scores, and those who knew they were brought in for paternity testing scored higher than others and the pathological cut-off point of 19. In adolescence, it is critical for children to discover how they seem to others. As the concept of self becomes redefined in this period, paternity testing may be associated with rejection and lead children to develop a low self-concept. Previous studies have also revealed that a perceived rejection may increase childhood depression both directly and indirectly, by lowering self-esteem (56-59). Paternity testing may lead not only to divorce and broken families but also to the separation of children from an adult whom they have always known as father. This may in turn cause a profound and lifelong fear of losing loved ones, as well as psychological and social adaptation problems. Children who are too young to grasp the situation may be traumatized by paternity testing and the following confusion, just as adolescents may be traumatized by broken families and fear of losing the person they have always called father.

The study has its limitations. To begin with, it was found that many fathers had this test done without letting their wives know. Because of the ethical concerns, only couples who required a test together were enrolled in the study. The majority of these families did not give their consent to the study. Those who gave their consent did so on the condition that the information gathered from them would not be associated with the test results. However, one-to-one matching between information obtained from the parents and children's test results may have yielded much more effective study results. The most serious limitations of the study were that children's depression levels were measured by a depression scale, psychiatric consultations were not possible with field experts, and thus psychiatric diagnoses such as depressive disorders could not be made. Child Depression Scale used here was not a diagnostic test but a support for clinical diagnosis. Last but not least, the study was conducted with families and children who came for a test, but follow-up interviews were not held after the test.

While some men see paternity testing as a way of evading the responsibility of being a spouse and father, some women see it as a way of pressurizing men into providing material support for the child. Whatever the motive for testing, children become affected by the way events unfold and the process. Unfortunately, men in Turkey with paternity doubts can take children for paternity testing without the consent of mothers claiming that they are taking children to the doctor's office or to the park. In reality, paternity testing is not a simple process that can be defined as presenting to a center for a test. It has the risk of changing the lives of mothers, children, biological fathers, and alleged fathers. Deciding on the test, taking a child to a center, waiting for the results, and creating solutions depending on the outcome may cause serious psychological problems. Thus, both mothers and fathers should consider how positive and negative test results might affect their lives and families, and then make a joint decision for the test. The priority should always be on protecting children from being adversely affected.

Paternity testing may be performed in private and public laboratories that focus mostly on testing and do not provide counseling services. However, families certainly need professional help during this difficult and painful process. Therefore, centers that provide paternity testing should also offer counseling for families and guide them to proper psychological help. Further, it is not enough to offer counseling and psychological help to all members of a family that will undertake paternity testing. Depending on test results, families and especially children need to be supported psychologically and referred to experts. The centers should employ pediatric

psychiatrists and psychologists; psychiatric sessions should be held with the children and adolescents brought for paternity testing; and detailed sessions should be organized to diagnose those who exceed the cut-off score. Also, planning comprehensive studies to establish the influence of paternity testing process on the children brought for testing and their families may make significant contributions to the field.

Even though it may be a proper approach to use a scientifically sound and globally accepted method in the solution of a problem as serious as kinship identification, it should be remembered that the lives of all parties change both before and after the test. Under the "United Nations Children's Rights Contract," every child has the basic right to live and is protected by the state against all behaviors that may harm his health, education, and development. Therefore, families who resolve to take the test, and especially their children, should be offered professional support, and many more studies should be conducted about the social echoes of this test.

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