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Examine the socio-emotional behaviour among monozygotic and dizygotic twins

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Abstract

Research on “examine the socio-emotional behaviour among monozygotic and dizygotic twins” was conducted during 2016 at UAS Dharwad. Youth self report (YSR) of externalizing, internalizing and total behavior problems were obtained for a sample of 78 twins (32 monozygotic and 46 dizygotic twins) from the Hubli and Dharwad cities. Snow ball sampling method was used to select respondents with age ranged 10 to 24 years. Findings revealed that majority of twins and singletons were indicated normal level with regard to dimensions, for internalizing, externalizing and total behaviour problems. Majority of them were had normal behaviours problem. It may due to their inter-twin relationship. It was found that, that, no significant association and difference between monozygotic and dizygotic twins for internalizing, externalizing and total behaviour problems. Among monozygotic twins, twin two had higher behavior problems as compared to twin one in all the three dimensions of socio emotional behaviour problems. However, there was no significant difference observed. The same trend was observed among dizygotic twins. With regard to total behaviour problems, twin two had higher behaviour problems which may be due over dependency on twin one. Dependent twins were significantly more likely to report feelings of inferiority and there was also more likely to be submissive than co-twin in the twin dyad. Results also found that there was no significant association between gender and socio-emotional behaviour problems. However, the mean score was higher for females among twins (17.17) than males (13.85) and significant difference was observed. Females had higher somatic problems than males. The mean score for externalizing problems of singleton males (23.93) was significantly higher than girls. Males reported more aggressive and rule breaking behavior than females.

Keywords: Socio-emotional behaviour, monozygotic and dizygotic twins

Introduction

Twins will deal with several matters within their life that only the two of them will comprehend. Twins themselves talk about each other, knowing what the other is thinking and recognizing intent by a simple expression or look. This type of behavior can only develop through a powerful bond. They experience significant life events in tandem and spend the majority of their time together. These special environmental conditions, which result from the moment of conception, affect the psychological and social development of twins, as well as the relationships they form throughout their lives.

Twins are two offspring's produced by the same pregnancy. Twin births are relatively rare event across the human population. Two types of twins are there: fraternal or dizygotic (DZ) and identical or monozygotic (MZ). The difference between the two types of twins depends on the fertilization of egg after conception. The fertilization of two separate eggs resulting in dizygotic twins and the fertilization of a single egg that later split in two, resulting in monozygotic twins. This difference in fertilization results in sharing an average of 50 per cent of their genetic material among dizygotic twins (much like non-twin full siblings) and the sharing 100 per cent of their genetic material among monozygotic twins.

Socio-emotional development includes the child's experience, expression and management of emotions and the ability to establish positive and rewarding relationships with others (Cohen *et al.*, 2005) [9]. The core features of emotional development include the ability to identify and understand one's own feelings, to accurately read and comprehend emotional states in others to manage strong emotions and their expression in a constructive manner, to regulate one's own behavior, to develop empathy for others and to establish and maintain relationships.

Thus, the present study was conducted to explore the knowledge regarding “examining the socio-emotional behaviour among monozygotic and dizygotic twins”

Material and Methods

The present study was conducted among 78 twins (32 monozygotic and 46 dizygotic) and from Hubli and Dharwad cities. A snow ball sampling method was used for the selection of

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unmarried twins for the study. The respondent's age ranged from 10 to 24 years. The self structured schedule was used to gather personal information like education, ordinal position, parental education and occupation. Socio-economic status of their family was assessed by SES scale developed by Agarwal *et al.* (2005) [9]. Zygosity was assessed based on the physical similarities like height, weight, skin color, hair color *etc.*

Achenbach System of Empirically Based Assessment (ASEBA) by Achenbach (2001) [11] has three different forms to assess socio-emotional behavior those are parent report, teacher report and youth self report. In this study youth self report (YSR) form for the age 11 to 18 years was used to assess the socio-emotional behavior of twins. The checklist consists of 112 statements about the child's behavior e.g. acts too young for his/her age where the responses were recorded on three likert scale: 0= not true, 1= sometimes true, 2= very true or often true. The questions were grouped into a number of syndromes e.g. aggressive behavior and their scores were summed to produce a score for that syndrome. There are eight syndrome subscale namely aggressive, withdrawn, depressed, somatic complaints, social problems, attention problems, thought problems, rule breaking behavior. Among these anxious/depressed, withdrawn and somatic complaints are grouped as internalizing problems. Aggressive and rule breaking behavior grouped as externalizing problems. And remaining syndromes are grouped as other behavior problems. The scale contains three dimensions that is internalizing, externalizing and total behavior problems. And each dimension has three level as normal, borderline and clinical level.

The total behavior problem was obtained by summing up the scores of all the items. For each syndrome, problem scale and total score tables are given, that determine whether the score represents normal, borderline or clinical behavior. The sums of raw scores are converted into T- scores. The classification of internalizing, externalizing and total behavior problem on the basis of T- scores are as follows.

T- scores are as follows

Levels	T score
Clinical	>64
Borderline	60-63
Normal	<59

The data was analyzed by using following statistical tools (Agarwal, 2006) [2] like frequency and percentage, Karl Pearson's product moment correlation coefficient and Chi square.

Result and discussion

The personal characteristics of the twins included age, gender education are presented in Table 1. Among monozygotic twins 56.25 per cent are females and remaining (43.75%) males. Among dizygotic twins 56.52 per cent are males and remaining females.

With respect to age, among monozygotic twins, 43.75 per cent of them belonged to adolescents (13-18 years) group and 31.25 per cent were belonged to young adulthood (19-24 years) group and 25 per cent belonged to late childhood (10-12 years) group. Among dizygotic, 52.18 per cent of them belonged to adolescents group followed by 30.43 per cent were in late childhood and 17.39 per cent were in young adulthood group.

With regard to ordinal position, 81.25 per cent are later borns and 18.75 per cent were first borns among monozygotic

twins. And 78.27 per cent were later borns and 21.73 per cent are first borns among dizygotic twins.

In case of respondent's education, 56.25 per cent of monozygotic twins were completed their high school level of education, followed by 25 per cent were graduated, 12.5 per cent of them had below graduation education level and 6.25 per cent were possessed professional degree. Among dizygotic twins, 56.52 per cent of them completed high school level of education, followed by 26.09 per cent of them were had below graduation level, 13.04 per cent and 4.35 per cent of them had degree and professional qualification respectively.

Distribution of monozygotic and dizygotic twins according to dimensions of socio-emotional behavior problems are presented in Table 2. For monozygotic twins, on internalizing problems, it was found that, majority of them fell under normal level (59.38%) followed by clinical level (25%) and borderline level (15.62%). In dizygotic twins, majority of them (56.54%) were in normal level followed by borderline and clinical level (21.73%) equally. With respect to externalizing problems, for monozygotic twins it was found that, majority of them were in normal level (75%) followed by borderline and clinical level (12.50%) equally. In dizygotic twins, majority of them fell under normal (63%) level followed by clinical level (21.70%) and borderline level (15.30%). With respect to total behavior problems, for monozygotic twins it was observed that, majority of them fell under normal level (62.50%) followed by borderline and clinical level (18.75%) equally. In dizygotic twins, 63 per cent of them were in normal level followed by clinical level (26.10%) and borderline level (10.90%).

Comparison of monozygotic and dizygotic twins by dimensions of socio emotional behavior in was depicted in Table 3. While comparing the mean values of monozygotic and dizygotic twins by three dimensions of behavior problems, it was observed that dizygotic twins were had higher mean values (15.82, 13.28 and 47.60 respectively) than monozygotic twins (56.34 and 53.86), however there was non-significant difference was found between groups.

It was found that, that there was no significant association and difference between monozygotic and dizygotic twins for internalizing, externalizing and total behavior problems (Table 2 and 3). It might be because, though there is a zygosity difference between two groups, twins always have better relationship as compared to non-twins. Segal-*et al.* (2008) [13] reported that, sibling support is stronger for twins than normal siblings. Hence twins may have more intimate relationship. For each twin, their co-twins have been found to be source of support and act as protector. Bekkus *et al.* (2011) [4] also reported that dizygotic twins share less sibling warmth than monozygotic twins however, there was no differences found in behavior problems.

Findings also revealed that majority of monozygotic and dizygotic twins were indicated normal level with regard to dimensions, for internalizing, externalizing and total behavior problems, majority of them were had normal behaviors problem. It may due to their inter-twin relationship. Twinship may be protective factors in the development of internalizing and externalizing problems. Because of twinship, that offers favorable social environment through interaction and social support of co-twins. The results are in line with the findings of Bongers *et al.* (2003) [6] which reported that, twins had tendency towards less externalizing behavior problems and the difference was significant. Gjone and Novik (2000) [10] reported that the levels of internalizing problems in Norweigan

childrens aged 5 to 15 years has been found to be lower than in twins. The tendency of twins to have fewer behavior problems might be explained by the fact that twins always have someone close for support. Siblings have been found to be a source of support to each other (Buhrmester and Furman 2000) [8]. High levels of siblings support have been associated with lower levels of internalizing problems (Branje *et al.*, 2004) [7].

Table 4 depicts comparison between twin 1 and 2. Monozygotic twins had almost equal mean values (14.56 and 15.12) With regard to internalizing behavior problems. In case dizygotic twins, with regard all the dimensions of socio emotional behavior problems twin 2 had higher (17.30, 14.17 and 49.65 respectively) behavior problems than twin 2 (14.30, 12.39 and 45.56 respectively) whereas the not significant difference was observed. With regard to total behavior problems, twin two had higher behavior problems which may be due over dependency on twin one. Dependent twins were significantly more likely to report feelings of inferiority and there was also more likely to be submissive than co-twin in the twin dyad (Trias *et al.*, 2010) [14]. Another study by Birtchnell *et al.* (1991) [5] also reported that the dependency is associated with verity of psychological, social and behavior problems. Dependency was correlated with problems with social behavior and self esteem.

Gender wise distribution of twins in socio-emotional behavior are presented in Table 5. It was observed that, among twins majority of the males (52.50, 67.50 and 65%) belonged to normal level of internalizing, externalizing and total behavior problems respectively. 20 per cent and 27.5 per cent of them belonged to borderline and clinical level of internalizing problems. More than half the of females (52.60%) were in normal level followed by clinical and borderline level (28.90% and 18.5% respectively) in internalizing factor. For externalizing problems, it was found that, 17.5 per cent and 15 per cent of male twins found in clinical and borderline level respectively. Similarly in case of female twins, most of them were fell under normal (68.40%) level followed by clinical (18.40%) and borderline level (13.20%) of externalizing problems.

For total behavior problems it was found that, 25 per cent of males in clinical level and only 7.50 per cent of were in borderline level. Whereas, more than half of female twins fell under normal (60.50%) level followed by clinical level (21.10%) and borderline level (18.40%). The statistical analysis revealed that, there was non-significant association was found between male and female group with levels of internalizing, externalizing as well as total behavior problem of twins.

Table 6 depicts the gender wise comparison among twins and singletons by of socio emotional behavior. In case of internalizing problems mean value of female twins (17.07) slightly higher the mean value of male twins (13.85).with respect to externalizing problems, mean value of males was slightly higher (14.45) than female (11.86) found to be same but in total behavior problems mean value of females twins found to be slightly higher (49.63) than male twins (47.35). The significant difference was observed only internalizing problems but not in externalizing and total behavior problems. Result revealed that there was no significant association between gender and socio-emotional behavior problems (Table 5). However, the mean score was higher for females among twins (17.17) than males (13.85) and significant difference was observed (Table 6). Females had higher somatic problems than males. The mean score for externalizing problems of singleton males (23.93) was significantly higher than girls. Males reported more aggressive and rule breaking behavior than females. The results are in line with Pulkkin *et al.* (2003) [11] found that, among twins girls exceed boys in internalizing problems and boys exceed girls in externalizing problem behaviors. Risper (2012) [12] who also found that, girls had higher internalizing problems than boys, while boys had higher externalizing problems than girls. Verholst *et al.* (2003) [15] showed that internalizing behaviors such as anxiety, mood disorders and depression were more frequent in females than males. Externalizing problems such as aggression were more in males than females.

Results

Table 1: Personal characteristics of twins N=78

Sl. No	Characteristics	Twins (n= 39 pairs)		Total (78)
		Monozygotic (n=32)	Dizygotic (n=46)	
Gender				
1	Male	14 (43.75)	26 (56.55)	40 (51.28)
	Female	18 (56.25)	20 (43.48)	38 (48.17)
Age (years)				
2	Late childhood (10-12 yrs)	8 (25.00)	14 (30.43)	22 (28.20)
	Adolescents (13- 18 yrs)	14 (43.75)	24 (52.18)	38 (48.64)
	Young adulthood (19-24 yrs)	10 (31.25)	8 (17.39)	18 (23.04)
Ordinal position				
3	First born	6 (18.75)	10 (21.73)	16 (20.48)
	Later born	26 (81.25)	36 (78.27)	62 (79.36)
Education				
4	Professional qualification of with technical degrees or diplomas	2 (6.25)	2 (4.35)	4 (5.12)
	Post graduation (non technical incl. Ph.D.)	-	-	-
	Graduation (B.A, B.com, B.Sc.)	8 (25.00)	6 (13.04)	14 (17.92)
	10 th class pass but < graduation	4 (12.50)	12 (26.09)	16 (20.48)
	Primary pass but < 10 th	18 (56.25)	26 (56.52)	44 (56.32)
	< primary but attended school for at least one	-	-	-
	Just literate but no schooling	-	-	-
Illiterate	-	-	-	

Figure in parenthesis indicate percentage

Table 2: Distribution of monozygotic and dizygotic twins by dimensions of socio-emotional behavior N=78

Zygoty	Levels of socio- emotional behavior			Total
	Normal	Borderline	Clinical	
Internalizing problems				
Monozygotic	19 (59.38)	5 (15.62)	8 (25.00)	32 (100.00)
Dizygotic	26 (56.54)	10 (21.73)	10 (21.73)	46 (100.00)
Total	45 (57.70)	15 (19.20)	18 (23.10)	78 (100.00)
Externalizing problems				
Monozygotic	20 (62.50)	6 (18.80)	6 (18.80)	32 (100.00)
Dizygotic	33 (63.00)	7 (10.90)	8 (17.40)	46 (100.00)
Total	53 (67.94)	11 (14.12)	14 (17.94)	78 (100.00)
Total behavior problems				
Monozygotic	20 (62.50)	6 (18.80)	6 (18.80)	32 (100.00)
Dizygotic	33 (63.00)	7 (10.90)	8 (17.40)	46 (100.00)
Total	49 (62.80)	11 (14.10)	18 (23.10)	78 (100.00)

Table 3: Comparison of monozygotic and dizygotic twins by dimensions of socio-emotional behavior N=78

Dimensions	Zygoty	Mean \pm SD	t-value
Internalizing problems	Monozygotic	14.84 \pm 5.79	0.67 ^{NS}
	Dizygotic	15.82 \pm 6.71	
Externalizing problems	Monozygotic	13.06 \pm 6.79	0.13 ^{NS}
	Dizygotic	13.28 \pm 7.66	
Total behavior problems	Monozygotic	49.68 \pm 20.02	0.40 ^{NS}
	Dizygotic	47.60 \pm 24.00	

Figure in parenthesis indicate percentage
NS - Non-significant

Table 4: Comparison of twin one and twin two by dimensions of socio emotional behavior N=78

Monozygotic twins			
Dimensions	Ordinal position	Mean \pm SD	t-value
Internalizing behavior problems	Twin 1	14.56 \pm 5.29	0.27 ^{NS}
	Twin 2	15.12 \pm 6.41	
Externalizing behavior problems	Twin 1	11.81 \pm 6.35	1.04 ^{NS}
	Twin 2	14.31 \pm 7.18	
Total behavior problems	Twin 1	45.68 \pm 17.97	1.13 ^{NS}
	Twin 2	53.68 \pm 21.70	
Dizygotic twins			
Dimensions	Ordinal position	Mean \pm SD	t-value
Internalizing behavior problems	Twin 1	14.30 \pm 6.07	1.56 ^{NS}
	Twin 2	17.34 \pm 7.11	
Externalizing behavior problems	Twin 1	12.39 \pm 7.42	0.78 ^{NS}
	Twin 2	14.17 \pm 7.94	
Total behavior problems	Twin 1	45.56 \pm 20.76	0.57 ^{NS}

NS - Non-significant

Table 5: Gender wise distribution by dimensions of socio-emotional behavior of twins N=78

Respondents	Gender	Levels of socio- emotional behavior			Total	Modified χ^2
		Normal	borderline	clinical		
Twins	Internalizing problems					
	Male	21 (52.5)	8 (20.00)	11 (27.50)	40 (100.0)	1.05 ^{NS}
	Female	24 (52.60)	7 (18.50)	7 (18.40)	38 (100.0)	
	Externalizing problems					
	Male	27 (67.50)	6 (15.00)	7 (17.50)	40 (100.0)	0.59 ^{NS}
	Female	26 (68.40)	5 (13.20)	7 (18.40)	38 (100.0)	
	Total behavior problem					
	Male	26 (65.00)	4 (10.00)	10 (25.00)	40 (100.0)	2.96 ^{NS}
	Female	23 (60.50)	7 (18.40)	8 (21.10)	38 (100.0)	

Figure in parenthesis indicate percentage
NS - Non-significant

Table 6: Gender wise comparison by socio-emotional behavior N=78

Dimensions	Respondents	Gender	Mean \pm SD	t-value
Internalizing problems	Twins	Male	13.85 \pm 5.65	2.37**
		Female	17.07 \pm 6.65	
Externalizing problems	Twins	Male	14.45 \pm 7.21	1.58 ^{NS}
		Female	11.86 \pm 7.18	
Total behavior problems	Twins	Male	47.35 \pm 22.9	0.44 ^{NS}
		Female	49.63 \pm 21.95	

Figure in parenthesis indicate percentage
NS - Non-significant
** - Significant at 0.01 level

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