

Received: 11.04.2015  
Accepted: 28.06.2015

A – Study Design  
B – Data Collection  
C – Statistical Analysis  
D – Data Interpretation  
E – Manuscript Preparation  
F – Literature Search  
G – Funds Collection

DOI:10.5604/17307503.1213004

# THE IMAGE OF A CHILD WITH FACIAL DYSMORPHISM IN A MOTHER'S PERCEPTION

Aleksandra Szulman-Wardal<sup>1,2(A,B,C,D,E,F)</sup>,  
Arkadiusz Mański<sup>1,3(A,B,C,D,E,F)</sup>

<sup>1</sup> Institute of Psychology, The University of Gdansk, Gdańsk, Poland

<sup>2</sup> The Specialist Hospital in Kościerzyna, Kościerzyna, Poland

<sup>3</sup> The Specialist Upbringing-Training Unit in Kościerzyna, Kościerzyna, Poland

## Background:

## Material/ Methods:

## Results:

## Conclusions:

## SUMMARY

Facial dysmorphisms are very often an integral component of numerous genetic syndromes. There is an especially clear link between facial dysmorphism and deeper intellectual disability. The coupling of the forms of dysmorphism occurring in a child's face with intellectual disability can significantly change the image of the child in the minds of those from its immediate environment/surroundings. The aim of the research was an evaluation of the perception on the part of the children's mothers of two groups of children with a moderate degree of intellectual disability (NIU): those with facial dysmorphism (DYS) and without facial dysmorphism (NON/DYS).

The research covered 83 mothers of children suffering from moderate intellectual disability. The first group comprised 52 mothers for whom their children, besides intellectual disability, also displayed facial dysmorphisms, while the other group was made up exclusively of 31 mothers whose children suffered from moderate intellectual disability yet did not have facial dysmorphism. The experiment made use of the semantic differential (SD) method comprising a 20 point scale of adjectives and their antonyms in four parameters: 'ability,' 'personal traits,' 'values,' 'appearance.' The mothers were asked to provide an evaluation of their own perception of their child.

The results obtained through the semantic differential method showed the absence of any significant statistical differences in the perception of their children by both groups of mothers with regard to three of the tested parameters: (1) personal traits – the mothers perceived their children as empathic, thoughtful and sociable; (2) values – for both groups of mothers their children are clever, hard-working and meticulous; (3) appearance – for both groups of mothers their children were good-looking and had a nice shape. There only occurred noticeable differences in the perception of functional ability – where the mothers of children with NIU and facial dysmorphism viewed their children as being more attractive and independent as well as being physically stronger than the mothers of children with NIU but without dysmorphism.

Mothers from both groups have a subjective, highly positive image of their intellectually disabled children in relation to the majority of the tested parameters. The only difference related to physical abilities. The mothers of children with NIU and dysmorphism viewed their children as being more active, resilient, independent and physically stronger than those who had children with NIU but without dysmorphism.

**Key words:** genetics, intellectual disability, intellectual disability

## INTRODUCTION

Coming into contact with the face of another person is an event that may be perceived from a number of viewpoints. For one's perception of a face is connected with not only the evaluation of other often remote traits and values of an individual, but also it regulates the contacts with another person (Pałchalska, Kaczmarek and Kropotov 2014). The eminent philosopher Emmanuel Levinas (2012: 227) emphasised that 'The face is present, not possessing any of its own material content. In this sense it cannot be comprehended, that is to formulate it as a whole.'

In works from the field of neuropsychology authors concentrate chiefly on disturbances in the perception of the face in patients affected by damage to the nervous system (Benton 1990, De Renzi et al. 1991, Tanaca and Sengco 1997, Walsh 1998, Ohme 2003, Ellis 2007, Czaplewska and Lipowska 2008, Wronka 2012).

The process of perceiving the face is presented within three theoretical-research paradigms:

- Bruce and Young (1986) in which the processes of transforming the face occur independently of oneself and in parallel;
- Hoffman and Haxby (2000) presenting the neurological bases for the processes of facial transformation;
- Maurera, Le Granda and Mondlocha (Wronka 2012 p.23) in which emphasised is the role of configurational transformation.

The Bruce and Young paradigm (op. cit.) is hierarchical in structure while the transformation has a phase character. In the first phase the observer analyses the structure of the face and obtains information on the various surface elements: the completeness of the face parts, the shape of the eyes and mouth, the appearance of the nose, of the shape of the head itself. In the second phase each of the preliminary characteristics independently become the source of a subsequent transformation at a deeper level. During this part the observer may obtain information about the identity of the face, the emotions experienced, the content of verbal communiqués and the direction of gaze. In accentuating the independence and concurrence of the transformation processes the authors draw attention to the fact that regardless of the build of individual faces it is possible to reliably read an utterance from the lips. In the Bruce and Young model of huge significance is the distinctiveness of the information connected with various stages within face transformation. When we do not know at all a given person the face does not constitute a generator of codes, as an assembly of information about a given person. It is possible, however, to describe the identity of a given person in relation to such traits as: race, state of health, age, intelligence. Bruce and Young define the code which in these situations reveals the semantically pictorial. Even a limited acquaintance with a given person results in a change within the code's quality, which is supplemented by information connected with this person's identity. In a situation of being well acquainted individuals at the various levels in the facial transformation only convey identity information. (Bruce 1982; Bruce and Young 1986). The presented model has been developed in numerous tests based on an analysis of facial transformation in individuals with varied

disturbances including individuals with Capgras syndrome, prosopagnosia, Fregoli delusion (Schweinberger and Burton 2003; Breen, Caine and Coltheart 2000; Ellis and Lewis, 2001; Ellis 2007; Paçhalska et al. 2013; Trystuła et al. 2015).

The second of the mentioned paradigms (Hoffman and Haxby 2000) emphasises the neuronal basis to the processes of face transformation, which was shown by many test results (including those of Hecaen and Angelergues 1962; Benton 1980; Puce et al. 1998; Hoffman and Haxby 2000). Differentiated in this model are the permanent and variable characteristics of the face (the invariant aspects of faces) which allow one to establish the identity of an individual despite the dynamic and constantly present changes on the face itself. Permanent characteristics serve in the obtainment of more or less accurate information on an individual's age, state of health, sex or race. Permanent characteristics have a decisively genetic origin and the complex effects of inheritance are responsible for their creation. (Brown and Paçhalska 2003).

Hoffman and Haxby (2000) have suggested that the face changes in each moment and that this does not significantly affect its corporeality. Despite these changes an observer extremely rarely experiences any difficulties in recognising and identifying other people. It is the changeable aspects of faces that account for this characteristic. The changeable aspects of faces are responsible for the detection and evaluation of the expressions that appear on the face. A special facial area which has gained a most individual set of characteristics are the eyes and their directional movement. The processing of information from this region serves in directing the gaze in the direction in which someone else is looking, thereby enabling the possibility to share any shared fragment of shared attention whatsoever. This paradigm although similar to that proposed by Bruce and Young (op. cit.) differs, however, in that fact that it proposes during the first stage of facial transformation not a structural analysis but an early perception of facial features. However, it is worth emphasising that the above mentioned authors have as yet not developed this aspect of transformation, something which from the viewpoint of creating the image of an individual of an altered appearance may significantly explain the essence of any disturbances that may be experienced by an observer of individuals with, among other things, server facial deformations (Wronka 2012).

The theoretical considerations presented here lead to two extremely important conclusions from the perspective of our research work:

The systems for the transformation of structural facial features, the evaluation of the mimic expression as well as the identification of the identity of an individual on the basis of the face is based on processes which are automated to a high degree, which increases the risk of creating images of other people rather on the basis of stereotypical or prototypical categorization.

The face belongs to that category of objects arousing the strongest reactions from the first moments of life, which brings many scientists to confirm the hypothesis as to the innate nature of the brain system in facial transformation (Brown and Paçhalska 2003).

The third above mentioned paradigm of phase transformation proposed by Maurer, Le Grand and Mondloch (2002) accentuates the earlier phases in facial transformation supplementing the paradigms presented by us above. The configurational transformation is three-phase in character:

*The ascribing of the face to the relevant class of objects:* the face as a whole comprising parts remaining with each other in certain fundamentally unchanged relations will require categorisation as a result of: the presence or absence of certain parts as well as the establishment of the proportion or disproportion in the relations of the individual parts in relation to each. The authors indicate that in this phase there occurs the establishment of so-called first order relations.

*The creation of an individual facial image;* which is the result of a synthesis of information obtained at the first stage of processing.

*The establishment of so-called second order relations:* necessary in this process is information on the situation of individual elements of the face in relation to each other, their size as well as the relative coloristic differentiation. The creators of the concept identify the creation of first order relations with the processes of facial detection. Within this research trend into face recognition attention is directed towards the particular disturbances experienced by those tested if there occurs an experimental manipulation of certain characteristics in the positioning of the face and its elements. One may here cite research into facial inversion which makes difficult the recognition of this face and alters many behavioural characteristics and the activity patterns in brain structures (Le Grand et al., 2001; Gobbin and Haxby 2006, Sagiv and Bentin 2001, Yovel and Kanwisher 2005). Facial construction from physical objects and their rotation by 180° radically changes the characteristics of brain activity, however maintaining facial orientation in accordance with the hypothetical prototype as well as with the use of physical objects results in answers at the brain level similar to the one achieved on the basis of real faces (Kanwisher, Tong and Nakayama 1998), the combining of various face halves and also the inversion of these images results in disturbances in ascribing an identity to the individuals visible in photographs (Hole, 1994); the separation of certain face parts or a change in the distance noticeably affects the determination of face identity, when, however, all the elements are present on the whole face it is easier to determine a person's identity as a result of face transformation despite disproportions in distances (Tanaka and Farah 1993, Tanaka and Sengco 1997).

Within the model of configurational transformation the final phase constitutes the most perfect and subtlest moment in the process of the recognition and identification of a face. Research shows that changeability in the spatial relations of the face cause the most serious disturbances (including slower and more difficult identification) than changes in the colour or shape of an individual element (Haig 1984; Le Grand et al. 2001; Freire and Lee 2001). The greater value in the relational aspect over the characteristics of a feature have also been shown in tests employing blurred photographs of a face, something which does not significantly influence identification if the face is not inverted. (Hayes 1988, Collishaw and

Hole 2000). However, it is enough to simply rotate a blurred face for a noticeable worsening in recognition and identification results to occur (Hayes 1988; Collishaw and Hole 2000). Configurational transformation supposes not only the existence of a certain facial prototype but also the creation of new cognitively unique representations for each face. The cognitive representations of the face are essential for their identification and the allocation of an identity to individuals encountered. In relation to this aspect irrefutable is the claim that there exist a means of connecting the cognitive representations of the face with other representations, in which is stored-in knowledge about other people (Wronka 2012:47).

In the currents presented researchers have analysed faces and the processes involved in their observation in the case of individuals affected by a genetic syndrome and by various deformities in the region of the face and skull. In the case of the existence within a child's face of dysmorphia, its situation may undergo a radical change when the dysmorphic features become to a greater or lesser extent an element interfering not only in the reception of the child's face but also in the child's overall functioning. Consequently the question arises as to whether those accompanying a child with facial dysmorphia experience certain disturbances in the perception of the child. It is worth considering whether the disability that visibly affects the child's face equally changes the perception of the child from the perspective of the psychology of social observation as equally that of the neuropsychological perspective. Whether those close to the child adopt, in a way similar to the social surroundings, a negative or overly simplified image of the child and consequently a negative attitude or approach towards the child (Larkowa 1970, Kowalik 2007). Or whether they shy away from, or avoid stereotypical thinking about the child and create an individual personalised subjective model of perception in relation to this child (Kaczmarek and Paçhalska 2014).

The aim of the research was to evaluate the mothers' perception of two groups of children with intellectual disabilities of a moderate degree (NIU) with facial dysmorphia (DYS) and without facial dysmorphia (NON/DYS).

## **MATERIALS**

The research covered the mothers of children with intellectual disabilities of a moderate degree (NIU) with facial dysmorphia (DYS) and without facial dysmorphia (NON/DYS). 52 (62.65%) mothers with children with NIU and facial dysmorphia were tested along with 31 (37,35%) of children with NIU but without facial dysmorphia.

### ***Inclusion criteria***

The selection of mothers for inclusion within the experiment was conducted on the basis of three criteria inclusively linked with their child (cf. Table 1).

The first inclusion criterion was the educational environment. The children selected attended educational-therapeutic schooling units at the first and second stage of education. The second criterion was the level of the child's intellectual development; with all children being characterised by a moderate degree of in-

Table 1. Inclusion criteria for the mothers in the experiment

Child's educational environment		Level of child's intellectual development	Scope of dysmorphia on the child's face
Educational-therapeutic complex	I educational stage II educational stage	Intellectual disability to a moderate degree	small defects
			large defects and small defects
			No defects

tellectual disability (NIU).

The third criteria concerned the scope of dysmorphia on the child's face. In the group of children with a moderate degree of intellectual disability (NIU) and with facial dysmorphia (DYS) were to be found children with various degrees of facial dysmorphia features, beginning with those with no defects, to the presence on the child's face of big and small inborn defects.

### ***The clinical characteristics***

The tests covered 83 mothers of children with intellectual disabilities of a moderate degree (NIU) with facial dysmorphia (DYS) and without facial dysmorphia (NON/DYS). As a result of the specifics of the subject of our research we will describe the clinical characteristics of those tested.

In the DYS group were 52 children (62.6%) with facial dysmorphia, while in the NON/DYS group 31 children (37.4%) without inborn facial defects. The variation in the dysmorphia traits were as follows: 33 children (39.7%) had many small defects on their face. 19 children (22.8%) were characterised by the presence of a single large defect and several smaller ones, while 31 children (37.5%) did not have any changes on their faces.

### ***The biographical characteristics of the mothers' group***

The biographical characteristics of the mothers tested (the group is homogeneous) is illustrated by Table 2. The sociometric data concerned age, place of abode, educational level and occupation.

The majority of the mothers tested from both groups were young individuals in the age range of 35 to 45 years old. Here were 57.6% of mothers with children with NIU/DYS and 48% of mothers with children with NIU/NON-DYS. This is a phenomenon showing a certain generational link in the mothers tested. The average age of a mother with children with NIU/DYS was 41.7 with the standard deviation being 7.7. In the group of mothers with NIU/NON-DYS the average age was 42.7 with the standard deviation being 7.8.

There were only 3% of those tested in the over 56-year-old band, that is two mothers of children with NIU/DYS and 13% of those tested, that is 3 mothers of children with NIU/NON-DYS. While in the group under the age of 34 were to be found 9.6% of those tested i.e., 5 mothers with NIU/DYS as well as 0.3% of those tested i.e., 1 mother with a child with NON/DYS

The next characteristic of the mothers was there place of abode. In the two groups the differentiation within the category was not too marked. More mothers

Table 2. Selectewd sociometric characteristics of the mothers tested

Sociometric data		Mothers of children with NIU and facial dysmorphia		Mothers of children with NIU without facial dysmorphia	
		n	%	N	%
Age	24 – 34	5	9.6	1	0.3
	35 – 45	30	57.6	15	48
	46 – 56	15	28.8	12	38.7
	over 56	2	3.0	3	13
Place of abode	urban	23	44.2	17	54.8
	rural	29	55.8	14	45.2
Educational level obtained	elementary (primary)	6	11.5	4	12.9
	vocational secondary	10	19.2	8	25.8
	secondary	23	44.2	12	38.7
	BA/BSc	1	1.9	1	3.2
	higher	13	23.1	6	19.4
Occupational situation	does not work	27	51.9	20	64.5
	is on social security benefits	1	1.9	3	9.7
	part-time position	2	3.8	0	0
	full-time job	22	42.3	8	25.8

of children with DYS i.e., 29 (55.8%) lived in a rural rather than an urban area (23, 44.2%). While the distribution of results in terms of place of abode amongst mothers with NON/DYS children was the opposite with 17 (54.8%) mothers living in towns and 14 (45.2%) in the countryside. Place of abode signifies many factors which could aid effective rehabilitation. Here may be enumerated distance from a rehabilitation unit as well as the number and variety in the forms of rehabilitation itself.

The next research criterion considered was the educational level of those tested. Amongst the mothers with children with DYS dominant i.e., 12 persons (44.2%) is the group with secondary education. A similar situation exists in the group of mothers with NON/DYS children, where the dominating category i.e., 12 individuals (38.7%) are those with a secondary education. It is worth emphasising the fact that 13 person had higher education (23.1%) of mothers with children with DYS and 6 persons (19.4%) amongst those with NON-DYS children. The criterion of education not only points to an individual's certain potential but also forms certain perspectives and life goals for their children. In terms of education only 11.5%, that is 6 mothers of children with DYS and 12.9% that is 6 mothers of children with NON/DYS had not undertaken any education after finishing primary school, while 19.2% i.e., 10 mothers with DYS children and 25.8% i.e., 8 mothers of 8 NON-DYS children had completed a vocational secondary school.

The last criterion in our research was occupation (profession), which to a significant degree resulted from the mothers' level of education. A child's intellectual disability can limit a mother's occupational plans or can be conducive to them taking up an occupational activity. Amongst mothers with DYS children 27 persons (51.9%) did not work. Occupational activity was undertaken by 46.1% of those tested, that is by 24 of the mothers with DYS children, wherein the decisive majority for all - 42.3%, of those tested i.e., 22 mothers worked full-time.

A similar occupational structure occurs in mothers with NON/DYS children.

Amongst mothers with NON/DYS children 20 persons (64.5%) were not employed. Occupational activity was undertaken by 25.8% of those tested, i.e., 8 mothers with NON/DYS children worked full-time.

## METHODS

The research was conducted with the use of a semantic differential (DS) which comprises 20 scales being of a seven-degree ordering nature. (Appendix). This technique was devised by Osgood et al. (1957) and is a specific method for the quantitative evaluation of the impression objects in the surrounding world make on a tested person. Every object or concept may be evaluated on a seven-point graphic scale as being closer to one of the pairs of the opposite definitions. The bipolar adjective scales are compositional elements from which the DS is constructed. Usually these are applied in tests of 15 or more adjective scales. In the procedure of DS testing the objects or concepts for evaluation are chosen in relation to the problem. In the presented research the content of the individual scales was selected most precisely in the three-stage procedure presented below. In the first part assembled was a most numerous collection of adjectives which could characterise the child while the source of these adjectives was, among others, the parents and teachers of intellectually disabled children. In the second stage 7 competent judges from the area of clinical psychology and rehabilitation were asked to choose those adjectives which could the best describe a child with intellectual disability in four dimensions: Functional ability, Personal traits, Values and Appearance. In the last part we carried out a selection of the adjectives with the greatest frequency of appearance within the given dimension. The maximum number of adjectives in the various dimensions was 5 (in total 20 scales in all of the dimensions). The formulation of an apt opposite (an antonym which would designate a feature of an opposite characteristic for each of the adjectives) concluded the process of method construction.

The characteristics of the traits in the various dimensions are illustrated in Table 3.

Table 3. Trait characteristics in the individual dimensions of the semantic differential (DS) used in the research

"Functional Ability" dimension				
Active – passive	Resilient – tired out	talented – untalented	Self-reliant – dependent	Physically strong – physically weak
"Personal traits" dimension				
Emotional – Unemotional	Empathetic – non- empathetic	Reflective – unreflective	Courageous – uncourageous	Social – unsocial
"Values" dimension				
Meticulous – unmeticulous	responsible – irresponsible	Clever – stupid	devoted – selfish	hard-working – lazy
"Appearance" dimension				
Slim – obese	pretty – ugly	shapely - unshapely	Tall – short	Undeformed – deformed



## RESULTS

We started the presentation of results from a description of the general characteristics obtained by means of SD. In the group of mothers with children with DYS the average of all the results for the individual scales is 5.04 (empirical average), which points to a significant shift in relation to the theoretical average (M=3.5) resulting from the SD construction. The lowest evaluation in this group was 3.50 and the highest 6.70. Being directed by the empirically obtained distribution of results it was determined that in this group 17 mothers (20.5%) had a very positive image of their children, 18 (21.7%) an average image while 17 (20.5%) lower than average. In the group of mothers with children with NON-DYS the average of all the results for the individual scales was 4.79 (the empirical average), which equally points to a shift in the image characteristics in the direction of the positive pole, far beyond the theoretical average of 3.5. Using the empirical average as the reference point for this group one may state that 12 (14.5%) of the mothers had an extremely positive image of their child, 9 (10.8%) had an average image while 10 (12%) perceived their child to a less positive degree. The results from the general characteristics obtained in the research already allow one to outline a certain interesting direction for considerations of not only the role of dysmorphia in the perception of a child but also the situations in which dysmorphia coexists with various kinds of disability.

A deeper analysis of the results revealed also other extremely interesting areas in the perception of children with NIU and DYS or NON-DYS.

### **Characteristics of a child in the “Functional ability” dimension (statistical and clinical analysis)**

The general result obtained from the testing of mothers with children with DYS and NON-DYS shows that the perception of children in the dimension of “Functional ability” does not differ at a statistically significant level amongst these groups of mothers (see: Table 4). Going deeper into the image of each of the scales of the “Functional ability” dimension it was possible to discern the differences between the individuals tested. The mothers of children with NIU and facial dysmorphia perceive their children as being more attractive and self-reliant as well as being physically stronger than do mothers of children with NIU yet without

Table 4. Children's characteristics within the 'functional ability' dimension

SEMANTIC DIFFERENTIAL SCALES	PERSONS TESTED				Test t
	MOTHERS / DYS		MOTHERS / NON DYS		
	M	SD	M	SD	
Factor I – functional ability	26.04	6.256	22.52	6.966	2.37
Active – Passive	5.75	1.748	4.90	2.211	1.93*
Resilient – Tired out	4.75	2.076	4.65	2.184	0.21
Talented – untalented	5.48	1.820	5.55	1.877	-0.16
Self-reliant – dependent	4.58	2.199	3.26	2.265	2.61**
Physically strong – physically weak	5.50	1.842	4.16	2.410	2.85 **

\*p<=0.05, \*\*p<=0.01, \*\*\*p<=0.001

facial dysmorphism. Three features differentiating these groups of mothers point to a certain image in the functioning of perceived children in the environment of their mothers. One may state from the perspective of a child that it is as self-reliant as it receives from those near not only help but a certain scope in freedom to obtain a goal. The results obtained in the other scales point to a certain area of joint perception of children on the part of their mothers. Such a conformity allows one to approximate the actual characteristics of a child with NIU making use of a special education within the framework of educational-therapeutic complexes located within the minds of those close to the child.

**Child's characteristics within the dimension 'Personal traits'  
(statistical and clinical analysis)**

The general result we obtained in the testing of mothers of children with DYS and NON-DYS shows that the perception of children within the 'Personal traits' dimension does not differ at a statistically significant level from the other group (see: Table 5). A deeper examination of the results for the particular scales did not show significant differentiations between those tested. The presence of dysmorphism on a child's face in no way affected differences in the images of these children. High results on the scales Emotional – Unemotional and Sociable – Unsociable may indicate a certain life priority amongst mothers in relation to their children. At the basis of such a characteristics distribution there can be expected a desire for such behaviour in their children so that they would be accepted by others despite the existing limitations. Also of special interest in our results turned out to be the low parameters on the Reflective-unreflective scale. Reflectiveness may be the resultant of an array of factors and as a feature 'deeply' embedded within human nature its preference is variably dependent on the epoch, culture or historical conditions. Time and again reflective persons may be perceived as less attractive, therefore there was less acceptance of this trait in the perception of children with NIU and DYS but NON-DYS may have its own source in certain current trends.

**Child's characteristics within the dimension of "Values"  
(statistical and clinical analysis)**

In the dimension of "Values" results in the particular scales showed total conformity between the mothers of children with NIU and facial dysmorphism and

Table 5. The characteristics of children in the 'Personal traits' dimension

SEMANTIC DIFFERENTIAL SCALES	PERSONS TESTED				Test t
	MOTHERS / DYS		MOTHERS / NON DYS		
	M	SD	M	SD	
Factor II – Personal traits	25,85	4,828	24,45	6,536	1.11
Emotional – Unemotional	6,19	1,085	6,19	1,327	-0.005
Empathetic – Non-empathetic	5,17	1,833	4,55	2,249	1.37
Reflective – unreflective	3,46	2,119	3,32	2,441	0.23
Courageous – uncourageous	5,06	2,155	4,32	2,315	1.46
Sociable – Unsociable	6,00	1,704	6,00	1,826	0.000

\*p<=0.05, \*\*p<=0.01, \*\*\*p<=0.001

Table 6. The characteristics of children in the 'Values' dimension

SEMANTIC DIFFERENTIAL SCALES	PERSONS TESTED				Test t
	MOTHERS / DYS		MOTHERS / NON DYS		
	M	SD	M	SD	
Factor III – Values	24.65	6.337	24.84	6.283	-0.12
Meticulous - Unmeticulous	4.58	2.181	4.87	2.460	-0.56
Responsible – Irresponsible	4.00	2.205	3.97	2.442	0.06
Clever – Stupid	5.90	1.404	5.68	1.514	0.69
Devoted – selfish	4.79	2.071	5.06	1.825	-0.61
Hard-working – Lazy	5.33	1.978	5.23	1.746	0.23

\*p<=0.05, \*\*p<=0.01, \*\*\*p<=0.001

those of children with NIU but without facial dysmorphia (see: Table 6). The perceiving of values in children and the high level of acceptance on the part of the mothers tested allow one to conjecture that taking into consideration the spiritual dimension within this relationship may be of value for both sides. This total conformity amongst mothers in the acceptance of the values which the children brought into relations with them and the surrounding world may point to an absence in the influence of dysmorphic features, as being visible or not regulating the spiritual expanse around the children. For both groups of tested mothers their children are quite simply clever, hard-working and meticulous. Such a sequence of traits, as manifested in the children's activities, can quite often surprise and even test specialists in their contact with the mothers of such children. To date it has not been proven that a person's facial appearance can be the first stage in uncovering value in the said person. However, it often is the case that we judge others with regard to responsibility for instance when we see the first features of responsibility on their face.

***Child's characteristics within the dimension 'Appearance' (statistical and clinical analysis)***

The "Appearance" dimension most relates to the phenomenon of dysmorphism. A face affected to a various degree and scope by dysmorphic features leads to a child being differentiated within its surroundings (see: Table 7). The authors of the article expected that the tests would verify common sense convictions, however the results turned out to be astonishingly different. On the gen-

Table 7. The characteristics of children in the 'Appearance' dimension

SEMANTIC DIFFERENTIAL SCALES	PERSONS TESTED				Test t
	MOTHERS / DYS		MOTHERS / NON DYS		
	M	SD	M	SD	
Factor IV – Appearance	24.33	5.174	24.16	5.687	0.13
Slim – Obese	4.12	2.184	4.45	2.293	-0.66
Pretty – Ugly	6.54	.917	3.97	2.442	0.10
Shapely – Unshapely	4.38	2.180	3.58	2.141	1.63
Tall – Short	3.69	2.063	4.42	2.335	-1.47
Undeformed – Deformed	5.60	1.993	5.32	2.212	0.58

\*p<=0.05, \*\*p<=0.01, \*\*\*p<=0.001

eral level, facial dysmorphism did not result in a difference in the results in both groups of the tested mothers. Scale analysis equally did not display any differences between the mothers in the 'Appearance' dimension scales. In both groups the children were characterised as not deformed and this conviction was marked by a high level of conformity. We took care also to ensure that the children recommended for depiction did not have any other physical deformations besides those situated on their faces. This fact additionally leads to reflection over the phenomenon of not taking into consideration facial dysmorphia in imaging a child.

## DISCUSSION

The presented results pointing to a high degree of conformity in images can derive from the close relations between the mother and child. In this set up a child with NIU and facial dysmorphia as well as a child with NIU without facial dysmorphia present an image that is accessible only to its mother. This picture repeatedly rejected by those from the 'corners' of distant relations may remain unchanged for many years while specialists involved in the rehabilitation of the child often come across mothers who do not take into consideration any deformations and disturbances in the child whatsoever. We took into consideration in our research a specific group of mothers and children. In both groups the images of the children emanated positivity and conformed with each other to a high degree. In order to grasp the differences we had to analyse in detail each of the scales and were surprised to uncover that out of 20 of these only 4 displayed any differentiation between the mothers. Discreet differences appeared in two dimensions: 'Appearance' and 'Functional ability.' The imaging of children particularly in these areas is affected by irregularities. In the remaining dimensions there was total conformity between the tested mothers. There remains within the context of the conducted tests the open question as to the state of the images of children with NIU and facial dysmorphia in those individuals involved in care over them, in their education, upbringing and rehabilitation. The environment of a disabled child is filled with individuals involved in the process of aiding the child's efforts and endeavours on the road to independence. Each of these people may take into consideration deformities and disturbances on a different level. The authors of the article in their rehabilitation practice observe a certain correctness pointing to the fact that those close to the child are to a lesser degree likely to perceive physical deformities in the child, ones resulting from genetic causes. Increasing the distance is conducive to an increased tendency to stigmatise and brand the child. The dynamism of a child's image within the network of relations of varied character remains a puzzle. The images of those 'further' from the child may, through their fragmentary nature and physicality, in no way harm the child for the child only sporadically comes across these individuals in its life. The matter is different when things concern those near. For they are with the child all the time and the presence of dehumanised or negative images would

result in permanent harm for the child. The close relationship of a mother and child in the context of perception and an awareness of dimorphic facial features has not been examined by researchers. The question as to whether the non-consideration of facial dysmorphism in the perception of a child constitutes a disturbance or clever mechanism created by nature to protect this fragile and unique relationship still remains open. The research carried out by Lee et al. (2005) directly corresponds to ours. In the research of Lee and others (2005) an attempt was made to evaluate the knowledge of specialist teachers and paediatricians in relation to: the physical appearance, cognitive and behavioural functioning in children with three different genetic syndromes. The researchers examined: Down syndrome, Fragile X syndrome (FRAX) and DiGeorge syndrome. 53 paediatricians and 69 teachers were asked their opinion. The results paradoxically revealed a large conformity in the level of knowledge about these syndromes. Of special interest were the following incidences of correctness:

Teachers and paediatricians display a high level of knowledge about the physical properties of children with Down syndrome. Less known is the phenotype of appearance for FRAX. As far as children with VCFS are concerned the level of knowledge in both groups was very low.

Doctors have a greater degree of awareness of the existence of physical irregularities in children with these syndromes and more often make use of nosologic knowledge in their work. This personal training creates a list of traits and characteristics and makes one sensitive to their existence and position. Teachers do not function within the nosology expanse, however they may have more frequent contact with children with genetic syndromes.

There was registered in both groups a low level of knowledge as to the cognitive and behavioural functioning of children with the syndromes mentioned. (Lee et al. 2005 p. 104).

Researchers drew attention to two factors that could impact on such an image of the genetic syndromes mentioned. Down syndrome and FRAX occur relatively frequently and the fact that in these syndromes there coexists intellectual disability increases the likelihood of an earlier inclusion within a special schooling system where contact with a teacher is more frequent and more individualised. The second factor is connected with the accessibility of professionals to knowledge about cognitive and behavioural phenotypes. Both groups could increase accessibility through deciding on furthering education in the given problem areas (Lee et al. 2005). Teachers and doctors are individuals from outside the immediate set of relationships. From the view point of their professions the phenotype of appearance creates the events more or less necessary, in which these individuals should effectively act in helping children. From the point of view of mothers with a child with facial dysmorphism they are able to bypass this area of knowledge for it is not essential for the continuation of a deep relationship with the child.

## CONCLUSIONS

In the light of the above presented theories (the propositions of Bruce and Young, Model Haxby's model and the conception for configurative transformation as advanced by Maurer, Le Granda and Mondloch) the appearance of the face has a significant influence on the image of the person themselves. The presence of facial dysmorphia may constitute an additional source for the transformation and creation of this image. A child with facial dysmorphia functions within a special situation, for their face can only most rarely be masked. Many children with facial dysmorphia require the action of rehabilitation many times during the course of their whole life. Within the circle of specialists helping the child a central role is played by the mother, who possesses to a large degree an image of the child at odds with that held by others. Against such a background the discovery of images of the child in other specialists may result in the shedding of a certain "light" on the creation of new qualities in the rehabilitation relations with them. In searching for certain models in rehabilitation relations most certainly a lot of inspirational moments may be sought by specialists in the relations of a mother and her facial dysmorphia child (a prototype for relief relations).

## REFERENCES

- Benton A. (1980) The neuropsychology of facial recognition. *American Psychologist*, 35, 176-186
- Benton A.L. (1990) Facial recognition 1990. *Cortex*, 26, 491-499
- Breen N., Caine D., Coltheart M. (2000) Models of face recognition and delusional misidentification. *Cognitive Neuropsychology*, 17, 55-71
- Brown J.W., Pačalska M. (2003). The symptom and its significance in neuropsychology. *Acta Neuropsychologica*, 1(1): 1-11.
- Bruce V. (1982) Influences of familiarity on the processing of faces. *Perception*, 15, 387-397
- Bruce V., Young A.W. (1986) Understanding face recognition. *British Journal of Psychology*, 77, 305-327
- Collishaw S.M., Hole G.J. (2000) Featural and configurational processes in the recognition of faces of different familiarity. *Perception*, 29, 893-909
- Czaplewska E., Lipowska M. (2008) Perception of facially and vocally expressed emotion in children with ADHD. *Acta Neuropsychologica* Vol. 6, No. 4, 337-348
- De Renzi i in. (1991) Apperceptive and associative forms of prosopagnosia. *Cortex*, 27, 213-221
- Ellis H.D. (2007) Delusions. A suitable case for imaging? *International Journal of Psychophysiology*, 63, 146-151
- Ellis H.D., Lewis M.B. (2001) Capgras delusion – a window on face recognition. *Trends in Cognitive Sciences*, 5, 149-156
- Freire A., Lee K. (2001) Face recognition in 4 to 7 year olds. Processing of configural, featural and paraphernalia information. *Journal of Experimental Child Psychology*, 80, 347-371
- Gobbini M.I., Huxby J.V. (2006) Neural response to the visual familiarity of faces. *Brain Research Bulletin*, 71, 76-82
- Haig N.D. (1984) The effect of feature displacement on face recognition. *Perception*, 13, 505-512
- Hayes A. (1988) Identification of two-tone images – some implications for high and low spatial-frequency processes in human vision. *Perception*, 17, 429-436
- Hecaen H., Angelergues R. (1962) Agnosia for faces (prosopagnosia). *Archives of Neurology*, 7, 24-32
- Hoffman E., Haxby J.V. (2000) Distinct representations of eye gaze and identity in the distributed human neural system for face perception. *Nature Neuroscience*, 3, 80-84

- Hole G. (1994) Configurational factors in the perception of unfamiliar faces. *Perception*, 23, 65-74
- Kanwisher N., Tong F., Nakayama K. (1998) The effect of face inversion on the human fusiform face area. *Cognition*, 68, B1-B11
- Kowalik S. (2007) *Psychologia rehabilitacji*. Wydawnictwo Akademickie i Profesjonalne. Warszawa
- Larkowa H. (1970) *Postawy otoczenia wobec inwalidów*. PZWL. Warszawa
- Lee T.H. i in. (2005) From Research to Practice: Teacher and Pediatrician Awareness of Phenotypic Traits in Neurogenetic Syndromes. *American Journal on Mental Retardation*: March 2005, Vol. 110, No. 2, pp. 100-106.
- Le Grand R. i in. (2001) Neuroperception. Early visual experience and face processing. *Nature*, 410, 890
- Levinas E. (2012) *Całość i nieskończoność. Esej o zewnętrzności*. Wydawnictwo Naukowe PWN
- Maurer D., Le Grand R., Mondloch C.J. (2002) The many faces of configural processing. *Trends in Cognitive Science*, 6, 255-260.
- Osgood C.E., Suci G.J., Tannenbaum P.H. (1957) *The measurement of meaning*. Urbana: USA: University of Illinois Press.
- Pachalska M, Kaczmarek B.L.J. (2014) Leon Kaczmarek's theory of speech and its significance for contemporary neuropsychology. *Acta Neuropsychologica* 12(2):2014: 127-143.
- Pachalska M., Buliński L., Kaczmarek B.L.J., Grochmal-Bach B., Łukaszewska B., Bazan M (2013) Fine Art and quality of life of famous artists with FTD. *Acta Neuropsychologica* 11:4:451-471.
- Pachalska M., Kaczmarek B.L.J., Kropotov J.D. (2014) *Neuropsychologia kliniczna: od teorii do praktyki*. Warszawa: Wydawnictwo Naukowe PWN.
- Puce i in. (1998) Temporal cortex activation of humans viewing eye and mouth movements. *Journal of Neuroscience*, 18, 2188-2199.
- Trystuła M., Zielińska J., Pórola P., Góral-Pórola J., Kropotov J.D., Pachalska M. (2015) Neuromarkers of anxiety in a patient with suspected schizophrenia and TIA: the effect of individually-tailored neurofeedback. *Acta Neuropsychologica* 13(4): 395-403.
- Sagiv N., Bentin S. (2001) Structural encoding of human and schematic faces. Holistic and part-based processes. *Journal of Cognitive Neuroscience*, 13, 937-951
- Schweinberger S.R., Burton A.M. (2003) Covert recognition and the neural system for face processing. *Cortex*, 39, 9-30
- Tanaka J.W., Sengco J.A. (1997) Features and their configuration in face recognition. *Memory and Cognition*, 25, 583-592
- Walsh K. (1998) *Neuropsychologia kliniczna*. Wydawnictwo Naukowe PWN. Warszawa
- Wronka, E. (2012) *Mózgowe podłoże rozpoznawania ekspresji emocjonalnej*. Wydawnictwo Uniwersytetu Jagiellońskiego. Kraków
- Yovel G., Kanwisher N. (2005) The neural basis of the behavioral face-inversion effect. *Curent Biology*, 15, 2256-2262

**Address for correspondence:**

Aleksandra Szulman-Wardal  
Institute of Psychology,  
University of Gdańsk  
Bażyńskiego 4 str. 80-952 Gdańsk, Poland  
e-mail: psyasw@ug.edu.pl

## Appendix

### Semantic differential (SD)

- |        |                         |                 |
|--------|-------------------------|-----------------|
| I.     | Active .....            | Passive         |
| II.    | Emotional .....         | Unemotional     |
| III.   | Precise .....           | Imprecise       |
| IV.    | Slim .....              | Obese           |
| V.     | Resilient .....         | Tired out       |
| VI.    | Empathetic .....        | Non-empathetic  |
| VII.   | Responsible .....       | Irresponsible   |
| VIII.  | Pretty .....            | Ugly            |
| IX.    | Talented .....          | Untalented      |
| X.     | Reflective .....        | Impulsive       |
| XI.    | Clever .....            | Stupid          |
| XII.   | Agile .....             | Clumsy          |
| XIII.  | Self-reliant .....      | Dependent       |
| XIV.   | Courageous .....        | Uncourageous    |
| XV.    | Devoted .....           | Selfish         |
| XVI.   | Tall .....              | Short           |
| XVII.  | Physically strong ..... | Physically weak |
| XVIII. | Sociable .....          | Unsociable      |
| XIX.   | Hard-working .....      | Lazy            |
| XX.    | Non-deformed .....      | Deformed        |