PREDICTABILITY OF LEVELS OF PHYSICAL AND MENTAL HEALTH IN ADULTS AND ADOLESCENTS: A 2 YEARS LONGITUDINAL STUDY

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SUMMARY

Background: *Comparative study at two years between adults and adolescents aimed at identifying the social, family, personality traits and health locus of control factors influencing physical and mental health, consumption of medications, and frequency of medical consultations.*

Method: *Twenty participants (10 adults and 10 adolescents) were included in a two years long longitudinal study. At baseline, participants' age, gender, family composition, net income, chronic treatments, family dynamics (Family Adaptation and Cohesion Scale), Multidimensional Health Locus of Control, and personality (NEO Personality Inventory) were recorded. Every six months their state of mental and physical health (12 Survey Factors and Hamilton Depression Scale), consumption of medications and number of medical consultations were reassessed.*

Results: *Age has a deleterious effect not only on physical health (r=-0.628*) but also on the frequency of depressive symptoms (r=0.576*). Adults are protected against the above effect by the number of people living in the same household (r=-0.588*). The ideal family or couple is more important than the actual family or couple. The higher these ideals, the healthier the adults (r=0.738*), and the less teenagers go to the doctors (r=-0.648*). Among adults, independence from others is correlated with good mental health (r=-0.829**) and among teens, ability to manage their wishes is positively correlated with good mental health (r=0.718**).*

Conclusion: *Although different mechanisms determine adolescents and adults' levels of health, other common mechanisms involved include age and the need for love. The older we grow, the more our health tends to deteriorate; the more we dream of love, the more it improves. The differences depend on the place that is left to others. Among teenagers, the first factor pertains to how well they manage their own desires; among adults, what matters most is independence from others.*

Key words: *adolescent – health - personality - locus of control - depression*

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INTRODUCTION

In previous studies, Zdanowicz (Zdanowicz 2004a, 2004b, 2006, 2008) compared the links between family dynamics, conception of health, and certain indicators of health among a group of healthy adolescents and a group of adolescents presenting various mental disorders. They used Olson's model (Familiy Adaptation and Cohesion Scale FACES III (Olson 1986) to investigate family dynamics. This model evaluates two dimensions of the functioning of a relational system: cohesion and adaptability. Cohesion is defined as "the emotional ties that every member develops with regard to the others". Adaptability is "the ability of the system to change its power structure, its roles and rules in response to stressful situations". A review about the use of this scale was published in 2008 (Zdanowicz 2006). In this research, health conception was investigated with Wallston's MHLC (Multidimensional Health Locus of Control) (Wallston 1978). This model explores how people relate to their own health in terms of the role they play in it. While certain individuals think they have a personal role to play to avoid or fight diseases (internal perception of "health locus of control"), others attribute the causes of their health to destiny or "others' influence" (members of the family or health profess-

sional). The MHLC distinguishes between three sub-scales: "Internality" (IHLC - Internal Health Locus of Control), "Others' Power" (PHLC - Powerful others Health Locus of Control), and "Chance" (CHLC - Chance Health Locus of Control).

In this previous study, adolescents' family cohesion and adaptability were not only differentiating variables between the two groups, but also proved to be influential in:

- Participants' conceptions of health.
- Changes of these conception at different ages.

On the whole, healthy adolescent' family of origin was more adaptable and especially more cohesive. Those results correlate with a higher feeling of control over one's health (internality-IHLC) and with a declining propensity to attribute responsibility over one's health to others over time (Power of Others-PHLC). In 2006, another study (Zdanowicz 2006) attempted to determine whether these variables could equally predict after 2 years, different indicators of health, such as medication consumption. This hypothesis was confirmed only for healthy adolescents. In order to complete, better objectify and extend these results, we conducted a 2 years longitudinal study that also included adults and personality factors. Twenty healthy participants – ten adolescent and ten adults – were evaluated every six

months in terms of their mental and physical health, consumption of medications, and frequency of medical consultations.

MATERIALS AND METHODS

Participants

Twenty Caucasian participants (ten between 12 and 18, and ten between 19 and 63) were enlisted after agreement and signature of a written consent. Participants' written consent was agreed by the Ethics Committee of the Catholic University of Louvain Mount Godinne clinics. The above agreement covers the national territory (Belgium B03920072846). The participants were to be free from any psychiatric disorder on axis I of the DSM IV and of any physical pathology, unless chronic and stable. The sample mean age was 29.14 year (std: 14.62). The youngest subject was 13, and the oldest 56. The gender ratio was nine females for eleven males. On average, four people (min 1, max 6) lived together (std: 1.5). The average net family income was 2.300€/month, the Belgian income average being of 1140€ /months/person.

Measures and procedure

The French version 5.0.0 of the MINI (Lecrubier 1998) (International Mini Neuropsychiatric Interview) was used in order to exclude all psychiatric disorders.

The collected socio-demographic data included age, gender, number of persons living in the same household (family composition), monthly net income (in the case of an adolescent, the cumulated income of his/her parents is divided by 2), and eventual treatment for a chronic condition.

The following basic data (independent variables) were also collected at time T_0.

- The cohesion and adaptability of the - nuclear and ideal - family of origin, as well as of the current and ideal couple, using Olson's FACES III (Olson 1986);
- Wallston's Multidimensional Health Locus of Control (MHLC) (Wallston 1978);
- Personality - according to Neo-FFi typology (Costa 1992). This instrument explores five dimensions of personality: neuroticism, extraversion, openness, likeability, and conscientiousness. Neuroticism refers to one's emotional stability and adaptability. The more salient this dimension, the more the subject feels

negative affects such as fear, sadness, anger, guilt, disgust, and embarrassment. Extrovert participants are sociable, although gregariousness is only one facet of extraversion. Extrovert people prefer large groups, are active, energetic, verbose and optimistic. Open participants are curious of everything that originates in their internal and external universe, and their life is rich in experiences. They typically conceive new ideas, adopt unconventional values, and experience intense positive and negative emotions. Participants who obtain a low grade on the openness dimension tend to be conservative and conventional in their opinions and behaviours. People who score high on agreeableness are altruistic, likable, helpful, and think they are likely to get help in return. People who score low on agreeableness are egocentric, suspicious of others' intention and are more likely to compete rather than cooperate. The dimension of conscientiousness (C) refers to the capacity to manage one's desires. This self-control can lead one to active planning, organizing, and realizing tasks. A positive high C score is associated with academic and professional success. A negative C score is correlated with exaggerated and painful requirements, with a compulsive need for order and cleanliness, and with work overload.

The following data (dependent variables) were collected at time T_0, and then every six months:

- the level of physical health (physical functioning, physical daily life functioning, physical pain, and general health), and mental functioning (vitality, social functioning, daily mental life functioning, and mental health) with SF-12 (Ware 1996);
- the level of depressive symptoms with Hamilton's 17 items scale (Hamilton 1996);
- prescribed drug consumption (number of drugs and their classification);
- medical consumption (number and types of medical consultations (general or specialized medicine, as well as the speciality type)).

Parametric statistical methods were used and checked for types 1 and 2 errors. No post-hoc test was realized. Correlations between continuous variables were studied with Pearson's test, controlled for eventual demographic co-variables, and eventually completed with a linear regression. Means were compared using t-Student test, and Pearson χ^2 as a test of independence.

Table 1. Comparison of the demographic variables

		Mean (SD)	t	p
Age	Adult	29 (11.8)	5.76	0.000
	Adolescent	16 (1.7)		
Income	Adult	2.5 (0.9)	0.474	0.641
	Adolescent	2.33 (0.7)		
Nbr perso	Adult	3.33 (1.5)	-3.284	0.005
	Adolescent	5.00 (0.7)		

Table 2. FACES III scores

			Mean (SD)	t	p
Fo	Co	Adult	32.75 (6.22)	-2.152	0.045
		Ado	38.00 (4.95)		
	Ada	Adult	24.75 (6.29)	-0.312	0.758
		Ado	25.44 (3.87)		
Fi	Co	Adult	41.25 (3.76)	-0.867	0.397
		Adolecent	42.56 (3.12)		
	Ada	Adult	31.92 (6.09)	3.001	0.008
		Adolecent	24.00 (5.89)		
Ci	Co	Adult	44.58 (3.20)	-0.225	0.826
		Adolecent	45.00 (4.82)		
	Ada	Adult	39.00 (4.51)	2.882	0.014
		Adolecent	30.00 (8.51)		

Fo: family of origin; Fi: ideal family; Ci: ideal family; Co: cohesion; Ada: adaptability

RESULTS

Demographic data

Both adult and adolescent samples have the same sex ratio (f/h) Adult: 0.7; adolescents: 0.8 ($x2$: 0016 p: 0899). The number of people living in the same household is significantly lower in families of adolescents (Table 1) and is therefore controlled in subsequent correlations.

Independent variables: FACES III, MHLC, Neo-FFI

The scores at the FACES III are detailed in Table 2.

Comparisons between the two samples show that adolescents describe their family of origin as more cohesive than do adults, and the adaptability of ideal families and couples is less important than for adults. In addition, we have shown in a previous article that the differences in observed levels of cohesion between FOR and FI are statistically significant (Zdanowicz 2006). The MHLC results show that adults and adolescents display the same level of internality (adult / adolescent 23.67 (sd: 3.20) / 23.78 (SD: 5.4) t=0.055, p=0.957). The difference in CHLC levels is not significant (17.92 (sd: 4.99) / 16.78 (sd: 0.534) t: 0.633 P=0.534). On the other hand, adolescents are clearly more dependent on others than adults (16.92 (sd: 3.23) / 22.11 (5.06) t=2.695, p=0.019). Results for the Neo-FFI are reported in Table 3 and no significant differences in personality appear.

Evolution of dependent variables: physical health, depressiveness, drugs consumption, medical consultation

As shown in Table 4, the only variable that worsened significantly between T0 and T24 months is the level of depressive symptoms on the Hamilton scale for adolescents. This aggravation is severe enough for the difference with the level of adults to reach the level of significance at T24. However the maximum value recorded is well below the threshold indicative of a risk of major depressive episode.

Correlations between demographic, independent variables and health factors at time T24

As shown in Table 5, factors for adults and adolescents are correlated with health indicators.

Table 3. Neo-ffi score

		Mean (SD)	t	p
Neuroticism	Adult	30.08 (8.12)	-1.796	0.088
	Adolescent	36.67 (8.55)		
Extraversion	Adult	40.92 (3.05)	-1.658	0.114
	Adolescent	44.33 (6.24)		
Open	Adult	38.67 (6.78)	0.853	0.405
	Adolescent	36.22 (6.28)		
Agreeability	Adult	41.67 (6.69)	0.579	0.569
	Adolescent	40.22 (4.73)		
Consciousness	Adult	42.00 (9.47)	-0.308	0.762
	Adolescent	43.11 (7.06)		

Table 4. Evolution of health factors

		Differences T0-T24			Differences adult – adolecent	
		Mean (SD)	t	p	t	p
Pysical Health	Adult	-2.74 (7.67)	-1.241	0.240	-1.226	0.235
	Adolescent	0.76 (5.43)	0.420	0.686		
Mental Health	Adult	0.98 (9.93)	0.345	0.737	1.198	0.247
	Adolescent	-4.08 (9.34)	-1.311	0.226		
Hamilton	Adult	-1.08 (6.14)	-0.611	0.554	-2.183	0.042
	Adolescent	4.00 (4.52)	2.650	0.029		
Nbr of medicine	Adult	-0.33 (1.55)	-0.742	0.474	0.207	0.838
	Adolescent	-0.44 (0.88)	-1.512	0.169		
Nbr of consultation	Adult	-0.66 (1.15)	-2.000	0.071	-0.539	0.596
	Adolescent	-0.44 (0.72)	-1.835	0.104		

Table 5. Correlations with health factors at 2 years

		Demographic (r)	Family (r)	Personnality (r)
Physical Health	Adult	Age (-0.628*)		Neuro (-0.729**)
	Adolescent		FiCo (0.738*)	
Nbr of consultation	Adult		FiCo (-0.648*) CiCo (-0.582)*	
	Adolescent			
Mental Health	Adult			PHLC (-0.829)**
	Adolescent			Csc (0.718)**
Hamilton	Adult	Age (0.576*) ToG (-0.588*)		
	Adolescent			

* p<0.05; ** 0.01>p<0.05; ToG: number of person living together; Fi: ideal family; Ci: ideal couple; Co: cohesion; Neuro: Neuroticism; Csc: Consciousness

DISCUSSION

In a previous study, we have been able to show that during adolescence, there is, among healthy young people a decrease with age of family cohesion. This decrease is inversely correlated with increased values for ideal families and couples. It appears that among healthy adolescents (young healthy adolescent have high value of cohesion for the families of origin as or present sample (Table 2)), with age, they detach themselves from it to the benefit of their ideals. Among adolescents suffering from a disease this does not happen. This phenomenon is important enough for the values of love (cohesion) in the ideal family to be a discriminating variable between healthy and unhealthy adolescents. The high values of the ideal couple and family thus appear to be associated with health. The present study shows that the importance of this ideali-zation influences the number of medical consultations (Table 5) in adults as well. This phenomenon is more difficult to elucidate in the sense that if an idealization that supports the process of detachment among adolescents can be understood, what is its meaning among adults? It seems instead that health in adults should be associated with satisfaction with their actual couple and family rather than have high ideal values (Zdanowicz 2006).

Health in adult age is characterized by an optimal ratio between internality and externality to ensure both health self-care (IHLC) and trust in others (PHLC). We have shown previously (Zdanowicz 2004) that in early adolescence, when the level of IHLC is already equal to that of adults, the level of PHLC is very high (parents manage more health than the young). Gradually with age, there is a decrease of PHLC to a level comparable to that of adults. The present data clearly reinforce the notion of a higher PHLC for teenagers, and shows that high PHLC in adulthood is detrimental to health (Table 5).

The increase in values at the Hamilton's among teens in 2 years overlaps with an observation that was made earlier. We have shown that with age, there is indeed an increased frequency of depressive symptoms among adolescents who do not meet the criteria for depression such as those of the DSM IV. This has particular clinical relevance in the sense that if a young depressive adolescent contrast easily in his/her own age group, an 18 year old with a Major Depressive Episode is much more difficult to identify among same age adolescents (Zdanowicz 2006, 2002). Table 5 brings other elements to our scrutiny. First, we note that age has a detrimental effect on both physical and depressive symptoms. Adults are protected against these effects by the number of people living in their household,

although, as we noted above, the ideals of love are more important than the love actually experienced. The higher these ideals, the healthier the adolescents, and the less adults go to the doctor. If among adults, management of mental health primarily depends on independence from others, among teens, it depends on their ability to manage their desires (Consciousness).

CONCLUSION

We can claim that if different mechanisms determine adults and teens' levels of health, two are common to both: age and the need for love. The older we grow, the more our health tends to deteriorate, and the more we dream of love, the more it improves. The differences are explained by the place we give others: For teenagers, the first factor pertains to how well they manage their own desires while for adults, what matters is their independence from others.

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