

## FAMILIES AND HEALTH INTERACTIONS

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### SUMMARY

**Background:** In recent years, psychologists of health have attempted to understand the relations between family dynamics and health. The aim of our study is not only to study relations inside families and couples (relations between family of origin, nuclear and ideal family, current and ideal couple) but also outside between families and couples and different health indicator (physical and mental health, consumption of medications, and frequency of medical consultations).

**Subjects and methods:** Twenty healthy subjects are included in a two years long longitudinal study. At baseline, subjects' age, gender, family composition, net income, chronic treatments, family dynamics (FACES III), Health Locus of Control (MHLC), and personality (NEO-FFI) are recorded.

**Results:** The adaptability level that we experience in our current couple appears partially to be an inherited value of the adaptability that we had in our family of origin ( $r=0.694$ ;  $p=0.026$ ). Moreover, the closer we are to each other in our nuclear family, the closer and more adaptable is our couple ( $r=0.893$ ;  $p=0.007$ ). Cohesion in the nuclear family is correlated with a desire for even more cohesion in the ideal family ( $r=0.898$ ;  $p=0.000$ ) and in the ideal couple ( $r=0.732$ ;  $p=0.016$ ). The only mechanism that slows down this aspiration for "always more" cohesion is the cohesion that the current couple is experiencing. Some of these factors seem to affect health indicators: cohesion of the ideal family and of the family of origin as well as cohesion of the current couple have positive effects on health indicators whereas levels of adaptability of the ideal family and the current couple have negative effects on health indicators.

**Conclusion:** At  $T_0$  and  $T_{6\text{ months}}$ , the level of physical health appears to be the more predictable variable. At time  $T_0$ , a tree factors model of linear regression including cohesion of family of origin, and of the current couple, with adaptability of the ideal family explains 82.4% of the variance. At time  $T_{6\text{ months}}$ , nuclear family cohesion, account for 46.5% of the variance.

**Key words:** family – health - Olson

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### INTRODUCTION

In previous studies, (Zdanowicz & Reynaert 2004, Zdanowicz et al. 2004, Zdanowicz 2008, Zdanowicz et al. 2006) we compared the links between family dynamic, conception of health, and certain indicators of health between a group of healthy adolescent, and a group of adolescents presenting different mental disorders. We used the Olson's model (Family 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". We published a review about the use of this scale (Zdanowicz 2008). The health conception had been investigated with Wallston's MHLC (Multidimensional Health Locus of Control) (Wallston et al. 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 professional). 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 our previous study, adolescents' family cohesion and adaptability were both differentiating variables between the two groups but also showed to be influential in:

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

On the whole the family of origin of healthy adolescents is 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 another study (Zdanowicz et al. 2006) we attempted to determine if these variables could equally predict 2 years of different indicators of health as, for example medication consumption. This hypothesis was confirmed only for healthy adolescents. In order to complete, better objectify and extent these results, we conduct a 2 years longitudinal study that also included adults, and personality factors in our criteria of health. Twenty healthy subjects - ten adolescent and ten adults -

are evaluated every six months in terms of their mental and physical health, consumption of medications, and frequency of medical consultations. In this article we present the results concerning relations inside families and between families and health indicators at 0 and 6 month. Based on our previous work we would like to test three hypotheses:

- H1: we wonder whether the level of adaptability in the current family and couple is correlated with the degree of cohesion and/or of adaptability we found in families of origin?
- H2: we want to confirm that regardless of the level of adaptability and / or cohesion of our current couple and / or family, we dream of a more cohesive / adaptive ideal couple and / or family.
- H3: We wonder whether these dreams have an impact on parameters of Health.

## SUBJECTS AND METHOD

### Subjects

Twenty Caucasian subjects selected at random from the phone directory (ten between 12 and 18, and ten between 19 and 63) are enlisted after agreement and signature of a written consent. Subjects who have been diagnosed with any psychiatric disorder on axis I of the DSM IV or from any physical pathology - unless it is chronic and stable - were excluded. The sample mean age was 29.14 (sd: 14.62). The youngest subject is aged 13, and the oldest, 56. The gender ratio is nine females for eleven males.

### Written consent

Subjects' 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).

### Material

The French version 5.0.0 of the MINI (Lecrubier et al. 1998) (International Mini Neuropsychiatric Interview) is employed in order to exclude all psychiatric disorders.

The socio-demographic data collected included number of persons living in the same habitation (family composition), net monthly income (in the case of an adolescent, the cumulated income of his/her parents is divided by the number of child). On average, four people (min 1, max 6) live together (sd: 1.5). The average net family income is 2.300€/month (sd 830€), the Belgian income average being of 1140€/months/person.

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

1. 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).

2. Wallston's Multidimensional Health Locus of Control (MHLC) (Wallston et al. 1978).
3. Personality - according to Neo-FFi typology (Costa & McCrae 1992). This instrument explores five dimensions of personality: neuroticism, extraversion, openness, agreeableness, and conscientiousness. The dimension neuroticism refers to one's emotional stability and adaptability. The more present this dimension, the more the subject feels negative affects such as fear, sadness, anger, guilt, disgust, and embarrassment. Extrovert subjects are sociable, although gregariousness is only one facet extraversion. Extrovert people prefer large groups, are active, energetic, verbose and optimistic. Open subjects 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. Subjects who obtain a low grade on the openness dimension tend to be conservative and conventional in their opinions and their 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 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 (health indicators) were collected at time  $T_0$ , and then every six months:

1. The level of physical health (physical functioning, general health), and mental functioning (vitality, social functioning, daily mental life functioning and mental health) with SF-12 (Ware & Keller 1996).
2. The level of depressive symptoms with Hamilton's 17 items scale (Hamilton 1967).
3. Prescribed drug consumption (number of drugs and their classification).
4. Medical consumption (number and types of medical consultations (general or specialized medicine, as well as the specialty 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  $\chi^2$  as a test of independence.

**Table 1.** FACES III scores

	Mean (sd)	Δ (Sd)	t	p
Cohesion average for Oslon: 40 min 10 – max 50				
Adaptability average for Oslon: 24 min 10 – max 50				
Cohesion Current couple:	39 (6.5)			
Ideal couple:	44.7 (3.8)	6.00 (5.90)	-3.212	0.011
Adaptability Current couple:	32.5 (6.1)			
Ideal couple:	35.1 (7.8)	5.40 (4.99)	-3.420	0.008
Cohesion Nuclear family:	39.1 (4.7)			
Ideal family:	41.8 (3.4)	0.30 (2.32)	-0.410	0.691
Adaptability Nuclear family:	25.3 (5.1)			
Ideal family	28.5 (7.1)	3.90 (2.92)	-4.219	0.002
Cohesion Origin family:	35 (6.1)			
Ideal family:	41.8 (3.4)	6.81 (1.32)	-5.147	0.000
Adaptability Origin family / ideal:	25 (5.2)			
Ideal family:	28.5 (7.1)	3.47 (1.67)	-2.07	0.05

## RESULTS

**Independent variables:** FACES III, MHLC, Neo-FFI

### FACES III (hypothesis 2)

The scores at the FACES III are detailed in table 1.

As expected from the second hypothesis, the subjects describe ideal couples and ideal families as more cohesive than their own. Except for the comparisons of means between present family cohesion versus ideal family, the observed differences are statistically significant.

### MHLC (min 6 - max 36)

The MHLC results show that on average, subjects are more "internal" (23.71, sd: 4.18), then "others' power" (19.14, sd: 4.1), and finally, are lower for the level of "chance" (17.43, sd: 4.0).

### Neo-FFI (min 0 - max 60)

As for personality, the dimension "extraversion" is predominant (42.38 sd: 4.87), followed by the dimension of "consciousness", (42.48 sd: 8.34), "agreeableness", (41.05 sd: 5.84), "openness" (37.62 sd: 6.53), and finally, "neuroticism" (32.9 sd: 8.76).

## Health Indicators

### SF12

The average scores on SF12 were of 51.15 (sd: 4.72) for physical health (whereas the Belgian average is 52.44 according to the ESEMED study (Alonso et al. 2002), and 51.51 (sd: 10.49) for mental health (the Belgian average being 57.13).

### Hamilton scale

On the Hamilton scale, our sample average of 3.90 (sd:3.23) is quite inferior to the limit of 7, which indicates a risk of depression close to nil. Two subjects scored respectively 9 and 13.

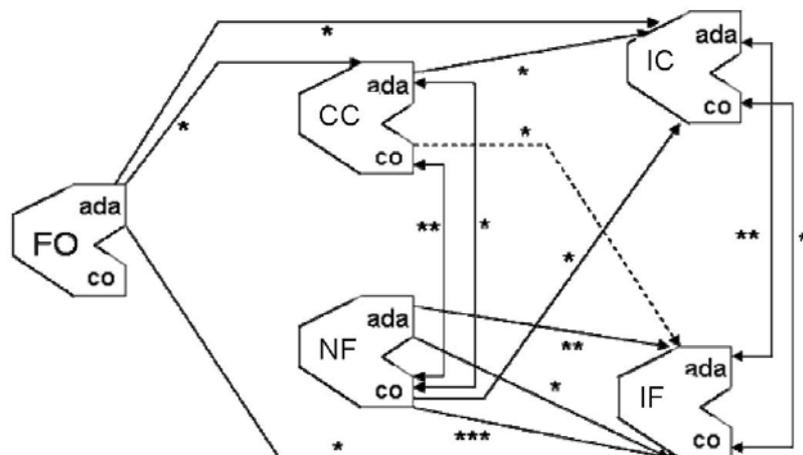
### Medication and Medical consultation

Two subjects take two medications on a chronic basis, and one subject takes only one medication regularly. Medical consultation is defined as nil in the beginning of the research.

Correlations between families dynamic's, health Locus of control and personality

### FACES III (hypothesis 1)

The results about correlations inside the different type of families' are summarized in figure 1 (hypothesis 1).



FO: Family of origin; CC: Current couple; NF: Nuclear family; IC: Ideal couple; IF: ideal family; co: cohesion; ada: adaptability; \*\*\*:  $p < 0.001$ ; \*\*  $0.001 < p < 0.01$ ; \*  $p < 0.05$

**Figure 1.** correlations between various components of the FACE III

**MHLC and Neo-FFI**

With reference to MHLC and personality traits, the most interesting results concern the CHLC because they stress the following correlations: the CHLC is correlated negatively with the cohesion of the ideal family ( $p=0.032$ ;  $r=-0.468$ ).

The other results show independence between:

- CHLC from cohesion of subjects' family of origin ( $p=0.959$  ;  $r=-0.012$ );
- IHLC from cohesion of subjects' nuclear family ( $p=0.958$ ;  $r=-0.019$ ), and from current couple ( $p=0.965$ ;  $r=-0.016$ );
- Subjects' extraversion is independent from the level of adaptability of the ideal family ( $p=0.961$ ;  $r=0.011$ );
- Neuroticism is independent from the level of adaptability of the ideal couple ( $p=0.998$ ;  $r<0.001$ );

- Openness is independent from cohesion of the ideal couple ( $p=0.979$ ;  $r=0.006$ ).

Correlations between MHLC, NEO-FFI and health indicator were published elsewhere (Zdanowicz et al. 2010).

**Correlations between families dynamics' and health (hypothesis 3)**

At time  $T_0$  the correlations analysis suggests that a number of factors positively or negatively influence health indicators as shown in table 2.

Physical health is the parameter that presents the highest quantity of intersections (3) with the families variables. If we introduce these parameters in a decreasing order of importance of coefficient in a linear regression we obtain a total of 82.4% of accounted variances ( $R\ 0.974$ ,  $R\ adjusted\ 0.908$ ,  $Sd\ error: 1.489$ ,  $f: 23.098$ ,  $p: 0.002$ ).

**Table 2.** Variables influencing health at time  $T_0$

Favourable to health				Unfavourable to health			
$T_0$							
FACES III	Health indicator	p	r	FACE SIII	Health indicator	p	r
FO co	Phys health	0.006	0.581	Ccu ada	Hamilton	0.038	0.659
Ccu co	Phys health	0.045	0.642	FI ada	Phys health	0.054	-0.426
FI co	Nbr med	0.025	-0.487				
$T_6$							
FN co	Phys health	0.030	0.682	FO ada	Nbr consults	0.044	0.443
FN ada	Hamilton	0.003	-0.854				

Abbreviations: F: family; C: couple; O: Origin; N: Nuclear; cu: current; I: ideal; co: cohesion; ada: adaptability; Phys health: physical health; Ment health: mental health; nbr med: number of medications

Except for the score on the depression scale all the parameters worsen in the 6 months period, but except for the number of medical consultation ( $t=-2.905$ ;  $p=0.009$ ), this evolution is not statistically significant.

The analysis of the controlled correlations for the co-variables at 6 months show that other factors influence health indicators. At time  $T_{6months}$ , nuclear family cohesion, account for 46.5% of the variance of the Physical health.

**DISCUSSION**

H1. The adaptability level that we experience in our current couple appears partially to be an inherited value of the adaptability that we had in our family of origin, and women seem more sensitive to it (Figure 1). Moreover, the closer we are to each other in our nuclear family, the closer and more adaptable is our couple. One easily can imagine that these correlations must vary according to particular circumstances. For example, conflicts in the family induce a decrease in the cohesion of the couple, and inversely, when the couple experiences a crisis, the decrease of cohesion and/or of adaptability of the couple induces a decrease of cohesion in the family.

H2. Cohesion in the nuclear family is correlated with a desire for even more cohesion in the ideal family (Table 1). Similarly, the adaptability of the nuclear family and family of origin as well as the adaptability of the current couple induces wishes for even more adaptable families and couples. The only mechanism that slows down this aspiration for "always more" cohesion and adaptability in the ideal family is the cohesion that the current couple is experiencing. But, in spite of this slowing down mechanism, it does nothing but limit a general tendency according to which, we always want more (except for family cohesion), as clearly shown by the evolution of the averages.

H3. Some of these factors seem to affect health indicators (Table 2): cohesion of the ideal family and of the family of origin as well as cohesion of the current couple have positive effects on health indicators whereas levels of adaptability of the ideal family and the current couple have negative effects on health indicators.

Moreover. What seems most interesting to us is to discover that factors that were correlated in the beginning of the study no longer correlate six months later, and that factors which were not correlated six months ago now are (Table 2). This seems to indicate

how much health is a sequential process where short term determining factors cease to be determining after a while. We also find interesting to discover that although we thought that mental health was an easier "correlate" than physical health, such is not the case. How one perceives one's physical health is the variable with the most predictive power, not only in terms of variables allowing to predict future physical health, but also in terms of explained variance.

## CONCLUSION

In contrast to what one could expect, the level of physical health proves to be a more predictable parameter than the level of mental health. The parameters that determine physical health evolve over time. At time  $T_0$ , a tree factors model of linear regression including cohesion of family of origin, and of the current couple, with adaptability of the ideal family explains 82.4% of the variance. At time  $T_{6\text{months}}$ , nuclear family cohesion, account for 46.5% of the variance. Further results must confirm these first observations.

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