
Anxiolytics Use in the Families with (Non)dependent Member: Relation to Dependence Indicators, Self and Family Perceptions Including Social Neuroscience Perspective

Maja Rus-Makovec, Karin Sernek and Velko S. Rus

Additional information is available at the end of the chapter

<http://dx.doi.org/10.5772/53307>

1. Introduction

Social neuroscience seeks to explain social behavior in terms of information processing mechanisms that motivate and guide social behavior and in terms of neurobiological mechanisms (genetic, hormonal, biochemical, physiological) that underline social behavior [1]. Social neuroscience could be defined quite broadly as exploration of interdependence between processes, traditionally belonging to social psychology and particular neurological factors [2]. Because of the complexity of human social interaction (exchange, communication), social neuroscience needs to combine and integrate multi-level analysis across different domains [1, 2]. It's worth repeating Cacioppo & Berntson [3] connecting multi – level approach: "The doctrine of multilevel analysis specifies that microanalyses of a psychological phenomenon can be particularly effective when pursued in addition to or in conjunction with molar analyses." Relation "brain – culture" could be defined also as a typical thematic part of social anthropo – psychology, expression, etymologically and recognizably showing to fields of thematically origin. Particular aspects of social neuroscience are connected also with some new areas of contemporary social psychology, with the questions of (bio) - psycho - social evolution, the questions of mate preferences included [4]; it's also connected with social psychosomatics, particularly with social cognition and with a view of the person's information – processing capability [5]. Three routes of social cognition are distinguished: capacity to mentalize, to mimic and understand others' motor actions and our capacity to empathize [6]. The social environment is multifaceted and comprises a dynamic set of environmental and behavioral interactions that influence the connections among individuals such as pa-

rent and child, husband and wives, groups etc. These connections from the social network can have an impact on brain development and function and can be both a risk and a protective factor against drug abuse [7]. Social neuroscience perspective seems to be one of the most suitable disciplines for understanding the field of psychotropic substance use and abuse. That is why we tried to introduce the social neuroscientific perspective in the field of anxiolytic (ab)use by parents in families with and without dependent family member in our research.

1.1. Brains and social psychology: Social neuroscience, social psychology and interdisciplinary perspectives

According to Illeris [8], inseparability of emotional and cognitive functions regarding the brain basis of their location seems to be one of the prevailing contemporary beliefs of contemporary neuroscience. Social psychological contributions to the neurosciences served to the intensive development of the psychoneuroimmunological field and immune responses are strongly influenced by the central nervous system (CNS) [9].

Social behavior could be connected with the brain functions and even structure also indirectly. Factually, we can hypothesize some connection, deriving from some evident and experimentally proved information. One of them is, for example, association between learning - cognitive style and hemisphericity. Torrance associated learning styles (left - more analytical, right - more synthetic and integrative hemispheric), characteristic also for social learning with dominant specialized functions of brain hemispheres [10]. Sphere only prevails, while the brain functions as a whole. More generally, we can conclude, that social neurosciences phenomena results in different outputs of activity, work, performance (effectiveness, efficacy), group structure and processes, climate, culture, communication and evaluation as interactive function of CNS activity. Information processing and decision making seem to be an important part of (social) neuroscience. According to Klavora [11], factors influencing information processing are the quality of sensory input information, the quality and effectiveness of sensory receptors, the speed of processing the stimulus information. Psychophysiological background and socio - psycho - neuro - logical relevancy of such a multilevel approach has been systematically developed by Cacioppo and collaborators [3, 8, 12]. The area of psychophysiology is connected with different efforts of neurophysiologists, experimental psychologists, psychiatrists and different technical professions [12]. Understanding behavioral flexibility, especially in the form of cultural variation, demands the understanding of the whole psychological "architecture", which guides social interaction [13].

1.2. Factual beginnings of social neuroscience? Eysenck, Moscovici, Personnaz

Pieces of mosaic of social neuroscience had existed already before. H. J. Eysenck's model, explanation of extra - introversion is such a possible example [14]. Habitually heightened level of central activation is supposed to be connected with introvert, and lowered level with extravert. That's why the extravert people, according to Eysenck, search new exogenous information and attempt to maintain ample social network of social relations and communica-

tions. Hypothetical construct of the balance between excitation and inhibition is reticular formation (RF). Psychotropic depressants (alcohol, benzodiazepines) and stimulants (caffeine, amphetamine) have direct influence on different parts of RF. According to Eysenck, depressants have extravert and stimulants have introvert effect, both being also typical patterns of social behavior.

Other piece of mosaic of the important de facto neuro scientific research, had been the research connecting active and consistent minorities and their influence on majority judgments and (sensory) perception, using the phenomenon of negative after effect [15] as the final dependent variable [16, 17]. Results of these experiments showed, although the dependent variable was the visual illusion, but illusion, based on central intervention, that also centrally determined phenomena could be influenced by minority (active and consistent) influence and that conversion could be sometimes additionally explained with complementary neuro – physiological consequences.

1.3. Listing of some social psychological thematic, differently connected with factual parts of social neuroscience

If we neglect so brutal and evident causes like head damage, which is also an exclusive element of behaviorist learning definition, elements of factual »social neuroscience« could be found also in many other cases, lets mention only research and applied phenomena of ideomotoric/visualization; than many aspects of NLP (neuro–linguistic programming); socio– and psycho–pathology of dependence behavior; sleeping and dreams, including different interpretations (metaphorical symbolism of dreams in classical Freudian psychoanalysis, archetype conception in Jung's concept of collective subconsciousness); associationist antecedents of contemporary social cognition [18-20]; a great deal of EEG classical research and applied practice; cognitive theories of emotion, respective any theory of emotion, including the function of limbic system; brain and body reactions; alpha learning conditions; biofeedback; conditioning (Pavlov, Sokolov, Teplov) and (neo)behaviorist approaches, also on the domain of social behavior; placebo–effects, particularly researches in the last years, proving activation of relevant brain areas as consequence of persuasive/suggestive placebo effect; bio–psycho–social aspects of aggression and aggressiveness; different psychoanalytic conceptions connected with unconscious brain processes (Freud, Jung, Adler, Lacan, Erikson, Klein); screening of organic brain damage related to alcohol abuse as important for treatment planning [21]. Mentioned damage is highly connected also with degree and duration of alcohol dependence. That's why we decided to take into account the very slight approximation of this probability in the sense of AUDIT (Alcohol Use Disorder Identifying Test) [22] estimation of intensity of alcohol dependence abuse. This estimation was treated as co–variate in the design, where the hypothesis about the differences in self perceptions regarding the anxiolytics usage status was taken into account.

From this point of view, the whole classical behaviorism could be interpreted as introduction into the social neuroscience, while social behavior is interpreted as more or less direct

function of centrally positioned associations Stimulus – Response, which are the basic point of any behavioral pattern.

1.4. Brain, behavior and social interaction in mood and dependence disorders

Ernst Fehr and collaborators [23] report about neurologic basis of social interactions, even on economic field (neuroeconomy). Such an approach could be helpful in explaining some irrational moments in otherwise rational cost – benefit dilemma resolution. According to Fehr, it even seems, that hormone oxytocin influences the experience of trust. Depression and anxiety is also a standard covariate of psychotropic medication treatments. That's why it's understandable, that psychopharmaceutical medications could have, in any group, an impact on different areas, levels and aspects of social interactions (communication, social exchange). Regarding alcohol dependence an understanding of action of alcohol on central gamma – amino butyric acid (GABA) receptors may significantly contribute to the incentive side of explanation of this disorder [3].

Although alterations in brain function can influence the symptoms which seem to be functional personality change, the inverse process is also possible. Depression, as an example of non-organic personality change, can result in symptoms, which are similar to alterations in brain functions - pseudo dementia, for example - which can disappear, when patients are treated with antidepressant medication. The relation between the psychopharmaceutical medications (non)use and different social representations of self and social environments, being an essential part of any social interaction (communication, social exchange and influence), is not at all one – way process. Anyway, in actual research, such a complexity of relations was not elaborated, while also the existent empirical methodology in behavioral sciences does not yet dispose with models, permitting analysis of two way processes, resulting in different effects of mutual partially simultaneous, partially sequential influences. However, it is well known, that epigenetic effects during development lead to a cascade of neurobiological changes, including enhanced emotionality [24].

Psychopharmaceutical medications affect brain neurotransmission processes for therapeutic purposes; however, psychotropic substances can be abused and alter behavior into non-functional/non-adaptive one. Altered brain neurobiology is the basis of dependence syndrome, with profound alteration on cognition, emotion and behavior of dependent person, which influence one's social interaction profoundly [25]. Mood and anxiety disorders are the most frequent cooccurrent mental disorders accompanying dependence syndrome and most frequent symptoms in important others of dependent patients [26]. Mood and anxiety disorders and dependence syndrome are most frequently treated by antidepressants and anxiolytics as psychopharmaceutical medications [27].

Progression on to drug dependence after the exposure appears to be genetically influenced; however, dependence is both a biological disorder and a cultural category [28]. The addictive process is introduced as an interaction of impairments in three functional systems: motivation-reward, affect regulation, and behavioral inhibition. From a cultural perspective, drug dependence is seen as being related to peer pressure and conformity as well as to economic and cultural factors [29].

The net effects of inhibiting the diffuse GABA are anxiety reduction, behavioral disinhibition, sedation and euphoria, what is all connected also with interpersonal communication, family perception, perceived depression and self – concept. That's why we can expect, that chosen psychopharmaceutical medications can at least partially influence (facilitate or inhibit) particular social behavioral patterns, particularly connecting (declared) depression, interpersonal relations in primary social environment and social implications of some other dependence behavior. These implications, manifested in different complex social situations could be quite subtle, sometimes hidden in "social mimicry", mostly connected with alcohol and other psychoactive substances abuse. One of the very opportune measures of such implications, according to our opinion, could be (sub) scores of SASSI (Substance Abuse Subtle Screening Inventory) instrument, which is declared to be the instrument which "breaks through denial" [30].

It seems that relations between concrete forms and contents of social interaction (complex patterns of cooperation, competition, conformism, cohesiveness, role learning, group decision, leadership, conflicts, negotiations, mediations) and CNS (re) actions are yet to be researched. That's why the choice of family social climate has two advantages: we treat it as a kind of experiential common denominator of different social interaction effects, while climate is an integrating experience, deriving from diversified processes of social interaction. Inducing climate as dependent variable, we focus on one of most relevant and integrating level of social experience. Simultaneously, (perceived) climate is one of the most essential parts of micro culture. Analyzing climate, we simultaneously analyze an important part of family culture. On the other side, evaluation of climate is inseparably connected with different self concepts (esteem, confidence, consciousness, efficacy belief) and self – evaluation. In actual text "functional" is supposed to be such a category of self – evaluation, when personal bipolar attributes express the continuum of everyday adaptive/functional behavior. We suppose that psychopharmaceutical medications (anxiolytics) contribute to the change of retrograde functional self – evaluations, while medicaments are supposed to be a reason of improvement of mood level.

That's why in actual article, we'd like to analyze possible relations between psychopharmaceutical medications (anxiolytics) usage (in the last year) status and some other relevant perceptions: evaluation of own family, self – esteem, self – perceived depression and substance abuse indicators. We can express the general level of our research problem with the question: Which are the relations between A. last year psychopharmaceutical medications use status and B. particular perceptions, connecting family, self and substance abuse dependence? The question about (anxiolytics) usage (in the last year) has been formulated as follows: "Did you use prescribed psychopharmaceutical medications such as anxiolytics because of your emotional problems in last year?"

We formulated three expectations:

H.1: we hypothesized, that self-esteem, evaluation of own family and level of depression as predictors significantly differentiate, regardless co-variate inclusion, between users and non-users of anxiolytic pills in the last year, so in the case of mothers, as in the case of fathers.

H.2: we expect, that the change of self-evaluation in last few years significantly differ between users and non-users, so in the case of fathers, as in the case of mothers.

H.3: we also hypothesized, that the groups of users and non-users significantly differ in correspondent SASSI subscores, so in the case of mother, as in the case of fathers.

In families, having a dependent member, dependence is also the main area of different perceptions, social representations and social interactions. That's why, in our research, the estimated dependence of each family member was included, where possible, as covariate. In our case, the alcohol dependence aspect was identified and taken into account as co-variate in sense of AUDIT estimated seriousness of alcohol dependence.

2. Method

2.1. Participants

There were three types of families, each type attempting to "mirror" approximate proportion of such a type in Slovene society: a. families with no referred dependent member, neither parents, nor adolescent (about 56% of the whole sample); b. families with drug dependent children (about 16% of the whole sample) and c. families with alcohol dependent father (about 28% of the whole sample). If there were more than one adolescent child in the same family, only the eldest one was included. The average age of adolescents was $M = 17.22$ years, with $SD = 1.27$ years, with 45 percents of female and 55 percents of male respondents. From $n = 183$ valid cases (families) and excluding all missing, $N = 159$ "valid" mothers (mean age $M = 42.85$, $SD = 4.68$) and $n = 147$ fathers (with mean age $M = 45.47$, $SD = 4.68$) appeared in calculations.

It's worth underlining, that neither by mothers, nor by fathers, significant differences were found in age (users – no: $n = 157$, $M = 42.70$, $SD = 4.66$; users – yes: $n = 22$, $M = 44.00$, $SD = 4.64$; $t(177) = -1.21$, $p = 0.23$ for mothers and users – no: $n = 141$, $M = 45.56$, $SD = 5.06$, users – yes: $n = 16$, $M = 44.94$, $SD = 4.65$; $t(155) = 0.47$, $p = 0.64$ for fathers) and education ($t(179) = 1.54$, $p = 0.12$ for mothers and $t(155) = 0.87$, $p = 0.38$ for fathers) and that no significant covariate effect of age had appeared neither by mothers (Pillai $F = 0.57$, $p = 0.63$), nor by fathers (Pillai $F = 0.97$, $p = 0.41$). On the other side, significant covariate effect of education was found for mothers (Pillai $F = 6.32$, $p = 0.00$, $\eta^2 = 0.10$), but not changing the significancy level of the independent variable (Pillai $F = 2.62$, $p = 0.05$, $\eta^2 = 0.046$); contrary to mothers, no such an effect was found for fathers (Pillai $F = 1.35$, $p = 0.26$, $\eta^2 = 0.03$).

2.2. Instruments

Relatively comprehensive questionnaire with 567 variables was applied, measuring different status and personal, subjective and objective characteristics (mothers and fathers 225 variables each, adolescents 117 variables). The whole questionnaire was applied so in individual, as in small group conditions. It seems that the conditions of data collecting influenced the number of missing, more of them being in small group conditions. The

main thematic area of the questionnaire, which contains different information about demographic, socio – economic and socio – cultural status, anamnesis information about health status in different periods of life cycle, life style information, about suicidal ideation, exposure to different kinds of violence, different dependence behaviors (alcohol, nicotine, drugs ...), info about intra – familiar processes, climate and, partially, culture, retrograde and actual self – evaluation, level of self-esteem and depression, evaluation of family climate, experiences with psychopharmacological treatment etc.. Validity was identified not only with coefficient of internal consistency (Table 1), which assures only the construct validity: from previous researches [31] validity of majority of summative scales was verified also with chosen outer criterion, consecrating almost equally needed time to construction as to validation of the instrument.

In actual report the following scales and questions from the total questionnaire were included into research: Zung's self – rating depression scale - 20 items [32], Rosenberg's self – esteem scale - 10 items [33]; original semantic differential for estimation of the climate in the proper family (15 bipolar continuums, selected according the demands of summative scale construction). Semantic differential - evaluation of the social climate in own family contained the following bipolar attributes on 7 – point bipolar continuums: good/bad, relaxed/not-relaxed, aggressive/non-aggressive, pleasant/unpleasant, tolerant/intolerant, unorganized/organized, non-conflicting/conflicting, not-developing/developing, enjoying/not-enjoying, with insight/without-insight, with future/without future, charged/uncharged, not understanding/ understanding, without support/with support, with love/without love.

Actual and retrograde («How do you evaluate yourself in time point about five years ago?») functional self – evaluation bipolar attributes of self – evaluation scale: nervous/calm, optimistic/pessimistic, with problems/without problems, lonely/with friends, independent/ dependent, with insight/without insight, mainly reposed/mainly tired, satisfied with/dissatisfied with, with bad habits/with good habits, successful in learning/unsuccesful in learning, non-creative/creative, self-conscious/self-unconscious, no-communicative/communicative.

According the authors belief about data validity, the missing values were not substituted with missing values.

Also the missing values appeared which influence different number of valid cases in certain final reports and so diminish a little bit even the generalization on the basis of initial sample.

For the occasion of this research, the Substance Abuse Subtle Screening Inventory SASSI [9] was for the first time applied in Slovenia. Instrument has two forms, for adolescents and for the parents. SASSI identify two probability categories of dependence: high and low substance dependence probability. SASSI was adapted to Slovene version according to all demands of forward – backward translation.

AUDIT (Alcohol Use Disorder Identifying Test) [21] approach to identify the (alcohol) dependence degree of fathers was also applied. According to value = 8, two categories were obtained, one of the expressing low probability for alcohol connected problems, another expressing high probability for alcohol use which is hazardous or harmful to the health. So as

SASSI, also the AUDIT validity could be tested regarding the classification by the side of experts (therapists). The rates of agreement between the experts and decision rules are described also as data validation [9]. In our research, both kinds of estimation almost perfectly coincided with classificational distinction from the side of experts –therapists (SASSI: χ^2 (2, n = 161) = 1.27, p = ns for nondependent mothers, but with 50 % of cells with expected counts less than 5; χ^2 (2, n = 167) = 91, p = 0.00 for (non)dependent children, with 16.7% of cells with expected counts < 5, and χ^2 (2, n = 139) = 84.90, p = 0.00, with 0% of expected counts < 5, for (non)dependent fathers).

Evaluations from the side of father	No of items	Alpha	Alpha	Alpha
		Group 1	Group 2	Group 3
Actual self evaluation	14	0.84	0.67	0.79
Retrograde self evaluation	14	0.80	0.84	0.85
Perceived family climate	15	0.89	0.92	0.83
Self – esteem	10	0.87	0.93	0.82
Perceived own depression	20	0.90	0.95	0.90
Evaluations from the side of mother				
Actual self evaluation	14	0.82	0.82	0.71
Retrograde self evaluation	14	0.79	0.75	0.86
Perceived family climate	15	0.93	0.91	0.87
Self – esteem	10	0.83	0.82	0.80
Perceived own depression	20	0.88	0.87	0.76

Note: group 1 = family without dependent member (n = 104); 2 = family with dependent adolescent child (n = 29); 3 = family with alcohol dependent father (n = 52)

Table 1. Internal Consistency – Cronbach's Alpha Coefficients – For Summative Scales, Responded from the Side of Fathers and Mothers for Each of Three Groups/Family Types

The following sub scores are obtained with SASSI 3: FVA = face valid alcohol; FVOD = face valid other drugs; SYM = symptoms; OAT = obvious attributes; SAT = subtle attributes; DEF = defensiveness; SAM = supplemental addiction measure; FAM = family vs. controls; COR = correctional. Maja Rus Makovec had obtained also a permission for back – translation/adaptation and research use of SASSI from the author.

Kolmogorov – Smirnov test showed, that almost all summative scores (actual and retrograde self perception; evaluation of own family climate; self – esteem) did not differ significantly from normal distribution ($p > .05$), while for SASSI subscores the alternative hypotheses were accepted. Internal consistency of almost all (except one version of self – evaluation) summative scores was satisfactory (all Cronbach alphas mostly > 0.85).

Research was approved from the side of Ethical commission of Health Ministry of Slovenia.

3. Results

Arithmetic Means and Standard Deviations of mothers' dependent variables are shown in Table 2.

	anxiolytics	M	SD	n
family climate	no	75.46	19.93	152
	yes	63.52	22.07	21
self-esteem	no	40.06	6.59	152
	yes	35.95	7.39	21
depression	no	37.56	8.21	152
	yes	43.05	10.63	21

Note: family climate = evaluation of climate in own family – mothers (higher score means more positive evaluation); self-esteem = Rosenberg's self – evaluation score – mothers (higher score means higher self – esteem); Zung's depression score – mothers; covariate = SASSI estimation of dependence seriousness by mothers.

Table 2. Arithmetic Means and Standard Deviations for Dependent Variables Regarding Usage vs. Non-Usage of Anxiolytics in the Last Year - Mothers

One factor MANOVA, exploring differences in self – esteem, perceived depression and family climate by parents as a function of their anxiolytic usage status (usage: yes vs. no) was applied for successive inclusion of one (mothers), two (mothers and fathers) and three (mothers, fathers, children) covariates (AUDIT for parents and therapists' estimation (TE) of dependence intensity for adolescents). Multivariate effect was found as significant (Pillai's, Wilks, Hotelling, all $p = 0.14$ and all Levene tests of equality of error variances with $df_1 = 1$ and $df = 171$ were highly un-significant, $p \gg .05$ ($p = ns$)); Box M test was significant ($F = 3.79$, $p = 0.001$), what means, that demand of equality of covariances (multivariate analogy with homogeneity of variances in univariate approaches) was not satisfied. Because F test is the robust one, we anyway continued with data analyses. Mothers' AUDIT estimation covariate effect was found as non – significant ($F = 0.57$, $p = 0.63$ ($p = ns$)).

Univariate access showed significant differences ($p < 0.05$) for each of three dependent variables, expressing significantly more positive evaluation of own family climate ($F(1,172) = 5.01$, $p = 0.026$), higher self – esteem ($F(1,172)$, $p = 0.01$) and lower degree of perceived depression ($F(1,172) = 7.35$, $p = 0.007$) for mothers non – users of anxiolytic pills, than for correspondent users.

Discriminate analysis was computed also in order to estimate the relative contribution of studied variables to the discrimination of mothers, users and non – users of psychotropic pills. Taking into account no other covariates, the first and the only one extracted discriminate functions was highly significant (Wilks Lambda = 0.94, $\chi^2(3) = 10.98$, $p = 0.01$). The null hypothesis about the homogeneity of covariance's was not accepted (Box's M = 27.21, $F = 4.28$, $p = 0.00$).

Structure matrix showed relatively rare structure of relative predictive importance of independents/predictors. All coefficients of correlations between constructed (summative scores) manifest variables and discriminate functions were relatively very high and almost equal (climate (0.81), self – esteem (0.81), perceived depression (0.82)).

According to the values of group centroids for significant ($p < 0.05$) discriminate function, it could be suggested, that the discriminate function differentiates “strongly” between female (non) users of anxiolytics.

MANOVA was found as significant also when additional AUDIT and TE covariates (for fathers and children) were successively included into analysis (Pillai, Wilks, Hotelling, Roy, all $p = 0.00$). Anyway, risk level of the effect of independent variable ((non)anxiolytic usage status) changed: having mothers’ ($F = 0.50, p = 0.68, \eta^2 = 0.009$) and fathers’ ($F = 2.91, p = 0.036, \eta^2 = 0.05$) AUDIT as covariates, it was $F = 3.43, p = 0.02, \eta^2 = 0.06$, and adding children’s TE ($F = 6.33, p = 0.00, \eta^2 = 0.106$), it was $F = 2.25, p = 0.08, \eta^2 = 0.04$.

One factor MANOVA, exploring differences in self – esteem, perceived depression and family climate by parents as a function of their anxiolytic usage status (usage: yes vs. no) was applied for successive inclusion of one (mothers), two (mothers and fathers) and three (mothers, fathers, children) covariates (AUDIT for parents and therapists’ estimation (TE) of dependence intensity for adolescents). Multivariate effect was found as non - significant (Roy’s, Pillai’s, Wilks, $p > 0.05$). Box’s M test of equality of covariance matrices was highly non - significant ($F = 0.93, p = 0.47$ ($p = ns$)), what confirmed the equality of co – variances. Fathers’ AUDIT estimation covariate effect was found as non – significant ($F = 0.05, p = 0.98$ ($p = ns$)).

Univariate access, of course, only confirmed non - significant differences ($p \gg 0.05$) for each of three dependent variables, for perceived climate ($F(1, 151) = 0.76, p = 0.38$), level of self – esteem ($F(1, 151) = 0.39, p = 0.53$ ($p = ns$)) and level of depression ($F(1, 151) = 0.68, p = 0.41$) for fathers non – users of psychotropic pills, than for correspondent users (Table 3).

	anxiolytics	M	SD	n
family climate	no	74.69	19.07	136
	yes	75.81	19.36	16
self-esteem	no	39.18	6.87	136
	yes	39.50	7.80	16
depression	no	36.47	7.08	136
	yes	38.62	7.91	16

Note: family climate = evaluation of climate in own family – mothers (higher score means more positive evaluation); self-esteem = Rosenberg’s self – evaluation score – mothers (higher score means higher self – esteem); Zung’s depression score – mothers; covariate = SASSI estimation of dependence seriousness by fathers.

Table 3. Arithmetic Means and Standard Deviations for Dependent Variables Regarding Usage vs. Non- usage of Anxiolytics in the Last Year - Fathers

Discriminate analysis was also computed in order to estimate the relative contribution of studied variables to the discrimination of fathers, users and non – users of anxiolytic pills. The first and the only one extracted discriminate functions was non – significant with (Wilks Lambda = 0.97, Chi sq. (3) = 3.78, p = 0.29). The null hypothesis about the homogeneity of covariance’s was otherwise accepted (Box’s M = 6.02, F approx = 0.93, p =.47), but the further analysis was omitted.

MANOVA was found as non - significant also when additional AUDIT and TE covariates (for fathers and children) were successively included into analysis (Pillai, Wilks, Hotelling, Roy, all p > 0.00 (p = ns)). Risk level of the effect of independent variable (anxiolytic usage status) did not change in sense of significancy (p > 0.05). Having mothers’ (F = 0.17, p =.91) and fathers’ (F = 15.79, p = 0.00, $\eta^2 = 0.24$) AUDIT as covariates, it was F = 1.33, p =.27, $\eta^2 = 0.03$, and adding children’s TE (F = 4.07, p =.01, $\eta^2 = 0.08$), it was F = 1.81, p =.15, $\eta^2 = 0.04$).

No significant differences were found between mothers users vs. non – users of in fathers’ perceived difference between actual and retrograde self – evaluation, but significant difference (p = 0.05) was found in perceived difference between actual and retrograde self – evaluation for mothers. Similar, but non – significant trend was found also for difference between relative fathers’ differences regarding mothers’ anxiolytics usage, and yet interestingly: in both cases the difference is negative, what means that retrograde summative functional self – evaluation was more positive than the actual one after about one year long period of its usage (Table 4).

	anxiolytics	M	SD	n	t- test	P
mothers						
E1-E2	no	0.20	11.41	157		
mothers	yes	- 5.19	14.75	21	1.96	0.05
E1-E2	no	- 0.69	9.30	128		
fathers	yes	- 4.78	11.42	14	1.53	0.13

Note: Levene F for mothers = 3.04, p = 0.08, for fathers F = 0.19, p = 0.66

E1 = actual self – evaluation (higher score means more positive self – evaluation); E2 = retrograde (“five years ago”) self – evaluation

Table 4. Arithmetic Means and Standard Deviations for Differences Between “Actual” and “Retrograde” Self – evaluation for Mothers and for Fathers Regarding the Anxiolytics(Non) Usage by Mothers

No significant differences were found between fathers users vs. non – users of anxiolytics fathers’ perceived difference between actual and retrograde self – evaluation and also not in perceived difference between actual and retrograde self – evaluation for mothers (Table 5).

	anxiolytics fathers	M	SD	n	t- test	P
E1-E2 mothers	no	0.36	10.80	126		
	yes	0.07	8.95	15	0.10	0.92
E1-E2 fathers	no	- 0.81	8.82	135		
	yes	- 0.19	17.89	16	- 0.14	0.89

Note: Levene F for mothers = 0.14, $p = 0.71$ ($p = ns$), for fathers Levene F = 11.74, $p = 0.01$.

E1 = actual self – evaluation (higher score means more positive self – evaluation); E2 = retrograde (“five years ago”) self – evaluation

Table 5. Arithmetic Means and Standard Deviations for Differences Between “Actual” and “Retrograde” Self – evaluation for Mothers and for Fathers Regarding the Anxiolytics(Non) Usage by Fathers

Significant differences ($p < 0.05$) by fathers were found for other drugs’ use FVODf, for category »symptoms« SYMf, and for obvious attributes OATf. Differences were not found for other subscores of SASSI (Table 6).

SASSI	anxiolytics usage	n	Mean Rank	Z	p
FVAf	no	141	77.94		
	yes	16	88.34	- 0.87	0.38
FVODf	no	141	77.20		
	yes	16	94.88	- 2.66	0.01
SYMf	no	141	76.30		
	yes	16	102.78	- 2.29	0.02
OATf	no	141	76.47		
	yes	16	101.28	- 2.09	0.04
SATf	no	141	77.71		
	yes	16	90.41	- 1.09	0.28
DEFf	no	141	80.93		
	yes	16	62.00	- 1.59	0.11
SAMf	no	141	77.29		
	yes	16	94.09	- 1.41	0.16
FAMf	no	141	79.14		
	yes	16	77.75	- 0.12	0.91

SASSI	anxiolytics usage	n	Mean Rank	Z	p
CORf	no	141	77.70		
	yes	16	90.44	- 1.07	0.28
RAPf	no	141	80.06		
	yes	16	69.69	- 0.93	0.35

Note: FVA = face valid alcohol; FVOD = face valid other drugs; SYM = symptoms; OAT = obvious attributes; SAT = subtle attributes; DEF = defensiveness; SAM = supplemental addiction measure; FAM = family vs. controls; COR = correctional; f = fathers.

Table 6. Results of Mann Whitney Nonparametric Test for SASSI Subscores for Fathers

Significant differences ($p < 0.05$) by mothers were found for category »symptoms« SYMm, obvious attributes OATm, correctional CORm and supplemental addiction measure SAMm. Differences were not found for other subscores of SASSI (Table 7).

SASSI	anxiolytics usage	n	Mean Rank	Z	p
FVA _m	no				
	yes	159	90.01		
FVOD _m	no	22	98.16	- 0.70	0.48
	yes	159	90.31		
SYM _m	no	22	95.95	- 0.96	0.34
	yes	159	88.58		
OAT _m	no	22	108.45	- 1.96	0.05
	yes	159	87.43		
SAT _m	no	22	116.82	- 2.49	0.01
	yes	159	90.40		
DEF _m	no	22	95.36	- 0.43	0.67
	yes	159	92.80		
SAM _m	no	22	78.02	- 1.25	0.21
	yes	159	87.52		
FAM _m	no	22	116.16	- 2.43	0.01
	yes	159	92.17		
COR _m	no	22	82.55	- 0.82	0.41
	yes	159	88.20		
	no	22	111.25	- 1.96	0.05

SASSI	anxiolytics usage	n	Mean Rank	Z	p
RAPm	yes	159	89.86		
		22	99.25	- 0.89	0.37

Note: FVA = face valid alcohol; FVOD = face valid other drugs; SYM = symptoms; OAT = obvious attributes; SAT = subtle attributes; DEF = defensiveness; SAM = supplemental addiction measure; FAM = family vs. controls; COR = correlational; m = mothers.

Table 7. Results of Mann Whitney Nonparametric Test for SASSI Sub scores for Mothers

4. Discussion

An example of the principle of multiple determinism of the social neuroscience can be found in the extensive literature on drug abuse. Endogenous brain opioid receptor systems represent the neurophysiologic basis for cognitive, psychological and affective actions. The proximate and powerful determinants of drug abuse include the social factors of family dynamics, economics and different other social environments [3]. It's what we had tried to begin to analyze in our article.

Interactions between social processes and the underlying neural substrates facilitate the understanding of the holistic consequences of the drug administration. Molar features of phenomenon (like self and own family perceptions) have also their micro – molecular correlations (like presumed anxiolytic pills influence/function), as complements of the multi-level approach.

In our research, for self and family climate perceptions, we rejected all alternative hypotheses in the case of fathers, while by mothers they were mostly accepted. The only exception was, when children's TE (therapists' estimation of drug abuse) was included as co – variate, when multivariate effect was significant on $p = 0.08$ risk level and univariate approach showed significant differences ($p < 0.05$) between mothers anxiolytics (non)users only for level of self esteem. Results suggest, that children's TE could be maybe treated as new independent variable and that anxiolytics (non)use effects on self and family perceptions by mothers' in families with dependent member depend more on children than on husbands health (dependence) status. Taking into account relatively small number ($n = 21$) of anxiolytics users mothers and non – significant, but relatively low risk level, $p = 0.08$, we can infer, that children dependence status could be interpreted more as relatively most important factual reason of anxiolytics' usage by mothers, what both effect mothers' self and family perceptions.

In the framework of this research design, this general trend could not be persuasively formulated more in detail. Anyway, it seems that patterns of social behavior, expressed by SASSI (sub) scores specifically enough express the connections with anxiolytics (none) usage. In the case of SASSI (sub) scores, hypotheses were partially accepted, partially rejected, but mostly in accordance with our expectations.

We can say, that all results together show important differences between male and female participants. Female participants show the evident trend of significant differences in their family climate and in self (esteem/depression) perceptions, while the male participants in our research do not. It seems that mothers with emotional problems communicate about them with medical doctors (which prescribe them anxiolytics), and fathers do not.

By mothers, for example, we did not find significant differences between the (non)users in face valid other drugs scores (FVOD); higher score on either scale means that clients acknowledge usage, consequences of usage and loss of control. Higher scores mean that the client is willing to admit to having a problem with alcohol/drugs. The face valid items are relatively easy for clients to manipulate. Results show, that female participants do not perceive anxiolytics as "other drugs", but fathers do. It can be said that fathers show more critical view towards anxiolytics use. However, in a Norwegian population-based cohort study of anxiety, depression and sleep, benzodiazepine (anxiolytics) were associated with a higher risk of severe anxiety, depression and sleep outcomes; benzodiazepine use was not found to be associated with a higher risk of problematic alcohol use [34]. Results of our small (clinical) study are similar in way: in fathers there has been a group with alcohol problem, but it did not associate with anxiolytic use, but mood problems (in mothers) did.

Perspectives from multiple perspectives are required to fully understand individual vulnerability to addictions [6]. Our small piece of work points to vulnerability of mothers with drug abusing children to anxiolytic (ab) use. On the other hand, in primates social rank (dominant to subordinate) has been found inversely related to locomotor activity and cocaine self administration. In other words, monkey with high levels of locomotor activity tend to be subordinate in rank and self-administer cocaine avidly. PET imaging showed also, that there was an inverse relationship between Dopamine D₂ receptor availability and cocaine self administration [35]. – It would be interesting to research the connection between mothers' social status in family with/without dependence problem, brain neurotransmitters availability and their proness to anxiolytic abuse.

We perceive the following advantages of our research: it seems that the research problem have been up to date quite rarely investigated; the research contributed to some aspects of so called decision rule validation of SASSI (sub scores), while just the anxiolytics (non) usage could be one of those approach approximation for chosen sub scores, defined as chemically determined; difference between the actual and retrograde self – evaluation (of functionality in the everyday life) seems to be quite a suitable measure of relative subjective success/failure; including the AUDIT and TE covariates of dependence seriousness, we tried to assure the necessary minimum of (a posteriori) statistical control and partial interpretability in the sense of consequences; users and non – users of anxiolytics did not significantly differ in age and education, what, together with AUDIT covariates, eventually contributes to attempt of more clear identification of anxiolytics effects; families with dependent member represented quite an adequate environment for anxiolytics usage effect study.

Weaknesses of our research could be the following: research design is quasi – experimental, a kind of “ex post facto”, without (direct) systematic and sensible manipulation of independent variable, without relevant control of (eventual) extraneous variables. That’s why relations between chosen dependents and independent could not be interpreted in the pure sense of causal relation. Effect sizes (eta square) are mostly (very) low; neurobiological effects are taken into account only indirectly, without sophisticated technological measurements. Also the distributions of AUDIT covariate estimations significantly differed from the normal one, what is normal taking account the character and purpose of the instrument. Internal consistency of instruments, as the additional demands for statistic calculations (homogeneity of covariance) were not ultimately respected. The structure of demographic, socio – economic and socio – cultural status of target participants do not permit spreader societal or cultural generalizations.

Anyway, results could be discussed also from the aspects of personal and micro – group (family) culture. According to Trice and Beyer [36], social climate is one of the essential parts (elements) of micro and macro group culture. From this point of view, also the individualistic – collectivistic orientation could be treated not only relatively, as underlined from some authors in last decade [37], but also on different micro and macro levels. Attachment to the values of the secondary family could mean also a typical micro–collectivistic orientation [38], without any anticipation of positive or negative connotations. In our research, evaluation of family climate is a central psychological variable, which correlate with some other indicators of group/family culture, like characteristic ways of communication, habits and rituals, perceived distribution of power/ influence, relevant social representations etc. From this aspect, we can conclude, that family culture is partially connected with brain – anxiolytics usage by females in Slovenia as representative part of Central European culture.

5. Conclusion

Social neuroscience finally ends one of the important phases of the developing of social psychology, which intensely obtained quantitative and qualitative accelerations in »eighties«, with applied social psychology, partially derived from societal and cross-cultural trends of development, what resulted in new relations to new interdisciplinary areas, and from social cognition, which revitalized the importance of social interaction, language/linguistic, social knowledge, taxonomy of meaning and categorization processes with prototypical perceptions. Neuroscience researches could be guided by different definitions of the field. One of the main objectives, goals, and purposes is only to understand better the relation between the brain, its related systems and social interaction. According to them, the instruments of social neuroscience are limited only by the imagination of the researcher: so creative uses of traditional approaches, as developments of new techniques are welcome [2]. That’s why we see our research as a micro attempt of the contribution to this field.

Author details

Maja Rus-Makovec^{1*}, Karin Sernec² and Velko S. Rus³

1 University Psychiatric Hospital Ljubljana & School of Medicine, University Ljubljana, Slovenia

2 University Psychiatric Hospital Ljubljana, Slovenia

3 Department of Psychology, Faculty of Arts, University Ljubljana, Slovenia

References

- [1] Ochsner KN, Lieberman MD. The emergence of social cognitive neuroscience. *American psychologist* 2001; 56: 717-34.
- [2] Decety J, Keenan JP. Social neuroscience: A new journal. *Social Neuroscience* 2006; 1: 1-4.
- [3] Cacioppo JT, Berntson GG. Social psychological contributions to the decade of the brain: doctrine of multilevel analysis. In: Kruglanski A, Higgins T (eds.). *Social psychology*. New York: Psychology Press; 2003. p 9 – 22.
- [4] Buss DM. Mate preferences in 37 cultures. In: Kruglanski A, Higgins T (eds.). *Social psychology*. New York: Psychology Press; 2003. p 3 – 8.
- [5] Taylor SE, Brown JD. Illusion and well being: a social psychological perspective on mental health. *Psychological Bulletin* 1988; 103(2): 193-210.
- [6] Singer T. The past, present and future of social neuroscience: A European perspective. *NeuroImage* 2012; 61: 437 - 9.
- [7] Schnur P, Shurtleff D. Social neuroscience: Application to addiction. *Drug and Alcohol Dependence* 2008; 94: 285-90.
- [8] Illeris K. *How we learn*. (2nd edition). New York: Routledge; 2007.
- [9] Caccioppo JT, Berntson GG, Lorig TS, Norris CJ, Rickett E, Nusbaum H. Just because you're imaging the brain doesn't mean you can stop using your head: a primer and set of first principles. *Journal of Personality and Social Psychology* 2003; 85: 650–661.
- [10] Torrance EP. Hemisphericity and creative functioning. *Journal of Research of Development and Education* 1983; 15: 29 – 37.
- [11] Klavara P. *Foundations of kinesiology – studying human movement and health*. Toronto: Sport books publishers; 2008.

- [12] Cacioppo JT, Petty RE, Tassinary LG. Social Psychophysiology: A New Look. Sociophysiology: A new look. In L. Berkowitz (Ed.). *Advances in experimental social psychology* (Vol. 22). Kent, UK: Harcourt; 1989. p 39-91.
- [13] Gangestad SW, Simpson JA. The evolution of human mating: trade – offs and strategic pluralism. *Behavioral and Brain Sciences* 2000; 23: 573-587.
- [14] Eysenck HJ. *The biological basis of personality*. Springfield: Charles & Thomas; 1967.
- [15] Hayes N. *Foundation of psychology*. London, New York: Routledge; 1994.
- [16] Moscovici S, Personnaz B. Studies in social influence V: minority influence and conversion behavior in a perceptual task. *Journal of experimental social psychology* 1981; 16: 270 – 282.
- [17] Personnaz B. Study in social influence using the spectrometer method: dynamic of the phenomena of conversion and correctness in perceptual responses. *European Journal of Social Psychology* 1981; II: 431–438.
- [18] Anderson JR, Bower GH. *Human associative memory*. Washington: Winston and Sons; 1973.
- [19] Collins AM, Loftus EF. A spreading activation theory of semantic processing. *Psychological Review* 1975; 82: 407–428.
- [20] Hayes–Roth B. Evolution of cognitive structures and processes. *Psychological Review* 1977; 84: 270–278.
- [21] Wagner EF, Sobell M, Sobell LS. Substance related disorders: alcohol. In: Hersen M., Turner SM, Beidel DC (eds.). *Adult Psychopathology and diagnosis* (5th ed.). Hoboken, NJ: Wiley; 2007. p 166 – 200
- [22] Allen JP, Litten RZ, Fertig JB, Babor T. A review of research on the Alcohol Use Disorders Identification Test (AUDIT). *Alcoholism: Clinical and Experimental Research* 1997; 21(4): 613-619.
- [23] Kossfeld M, Heinrichs M, Zak P, Fishbacher U, Fehr E. Oxytocin increases trust in humans. *Nature* 2005; 435: 673–676.
- [24] Curley JP, Jensen CL, Mashood R, Champagne FA. Social influences on neurobiology and behavior: Epigenetic effects during development. *Psychoneuroendocrinology* 2011; 36: 352-71.
- [25] Koob GF, Le Moal M. *Neurobiology of Addiction*. London: Elsevier; 2006.
- [26] Brady KT, Sinha R. Co-occurring mental and substance use disorders: the neurobiological effect of chronic stress. *Am J Psychiatry* 2005; 162: 1483-1493.
- [27] Stahl SM. *Stahl’s Essential Psychopharmacology*. Cambridge: Cambridge University Press; 2008.

- [28] Goodman A. Neurobiology of addiction. An integrative review. *Biochemical Pharmacology* 2008; 75: 266-322.
- [29] Boyarsky BK, Dilts S, Frances RJ et al. Responsibility and Choice in Addiction. *Psychiatric Services* 2002; 53 (6): 707-13.
- [30] Miller FG, Miller M, Knot R, Renn W. Breaking through denial – The SASSI-3 a new addiction measure. The SASSI-3 Institute. News & Reports, vol. 1. Bloomington: The SASSI institute; 1994.
- [31] Rus VS. Sociopsihologija kot sodobna paradigma socialne psihologije (Sociopsychology as contemporary paradigm of social psychology). Ljubljana: Univerza v Ljubljani, Filozofska fakulteta; 1999.
- [32] Zung WA. Self – rating depression scale. *Arch Gen Psychiatry* 1965; 12: 63–70.
- [33] Rosenberg M. Society and the adolescent self – image. Princeton: Princeton University Press; 1989.
- [34] Nordfjaern T. A population-based cohort study of anxiety, depression, sleep and alcohol outcomes among benzodiazepine and z-hypnotic users. *Addictive Behaviors* 2012; 37: 1151-7.
- [35] Nader MA, Czoty PW. PET imaging of dopamine D₂ receptors in monkey models of cocaine abuse: genetic predisposition environmental modulation. *Am J Psychiat* 2005; 162: 1473-82.
- [36] Trice HM, Beyer JM. The Cultures of Work Organizations. New Jersey: Englewood Cliffs; 1993.
- [37] Oyserman D, Coon H, Kimmelmeier M. Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin* 2002; 128(1): 3-72. doi: 10.1037/0033-2909.128.1.3
- [38] Rus VS. Socialna in societalna psihologija (z obrisi sociopsihologije) (Social and societal psychology (with frames of sociopsychology)). Ljubljana: Univerza v Ljubljani, Filozofska fakulteta; 1997.

