RELATIONSHIP BETWEEN PERSONALITY, BIOLOGICAL MARKERS AND FACETS OF ALCOHOLISM

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1. INTRODUCTION

1.1. THEORETICAL BACKGROUND AND OBJECTIVES

Alcoholism is a very common diagnosis affecting persons of every social class and every country. Worldwide alcohol consumption causes 2,5 millions of deaths p. a. (3.8 % of total) and 69.4 million (4.5 % of total) of Disability-Adjusted Life Years (DALYs), and is responsible for many health and social problems according to information provided by the World Health Organization (2010).

A vast number of publications have analysed psychological and biological causes and concomitants of alcoholism and special features of drinking patterns, therapy and relapse. Among the psychological correlates of alcoholism, personality traits derived from impulse control disorders like impulsivity and Aggression as well as those associated with psychological states often preceding onset of alcoholism like Depression and anxiety have been described as characteristics of this disorder (Birkley & Smith, 2011; Nees et al, 2011; Shin, Hong & Jeon, 2012; Settles, Fischer, Cyders, Combs, Gunn & Smith, 2011).

The aim of the present study is to elucidate the relationship between alcoholism related personality traits and certain aspects of alcoholism. Since the most prominent traits related to alcohol dependence are Depression and Aggression, our first concern is with the relevance of these personality traits in the context of alcohol dependence.

Previous observations concerning clinical and biochemical relationships of personality dimensions point to much overlap between Depression and Aggression. Since it has been shown that both personality traits seem to be characterised by intolerance to frustration, the first step was the development of a questionnaire to test reactivity to every day life frustration which should contain different kinds of depressive and aggressive reactions, elicited by different kinds of frustrating stimuli. Exposure to negative events on the one hand and deprivation from expected positive ones on the other are supposed to result in specific response patterns. Furthermore, it seemed relevant, if frustrations are evoked by human involvement or inanimate obstacles and if frustrating conditions induced by humans are caused deliberately or unintentionally.

Since Depression and Aggression may be differently sensitive to different types of frustration and may elicit different types of aggressive or depressive responses it

seemed worthwhile to investigate the relationship of these response patterns to the personality traits of Depression and Aggression, the salient concomitants of alcohol dependence.

In a second step it was tried to investigate if also factors of alcohol history and habits of drinking are differently associated with different personality traits and different susceptibilities to frustrating events.

Finally, biological markers are considered in the present investigation which might elucidate the development and causes of alcohol dependence.

Low platelet MAO activity, one important enzyme responsible for metabolism of dopamine in the brain, has been shown to be associated with alcoholism as well as with the personality trait of impulsivity and criminal behavior. One of the genetic polymorphisms responsible for MAO B activity in platelets is the intron 13 A/G polymorphism. So far it has not been clear if this polymorphism is truly related to MAO B activity and if it is related to either alcohol dependence or impulsivity. Therefore this study investigated if the intron 13 A/G polymorphism in combination with MAO B activity in platelets can contribute to defining endophenotypes in the field of alcohol dependence and impulsivity.

Additionally, the Val158Met polymorphism of the gene coding for the enzyme catechol-O-methyltransferase (COMT) is considered, since COMT acts synergistically with MAO B in degradation of dopamine, and therefore additive or interaction effects can be expected. Hence, this aspect forms the third complex of the present investigation.

1.2. Depression, Aggression and Tolerance to Frustration

As the present examination deals with Aggression and Depression in the context of a psychopathological disorder, the following consideration has to be addressed as a premise.

It has already been claimed by Kretschmer (1921) and Eysenck (1947) that symptoms of psychiatric diseases may be observed on a milder level in nonclinical populations which suggests a continuum between disease and normal behavior. Psychologists used some of these symptoms as items to construct scales by factor analysis for specific pathology related personality traits like Depression or Aggression. Such scales

nowadays usually form subscales of broader personality inventories like the NEO-PI-R used for assessment of the five factor model of personality. When applied to clinical samples, personality scales like those of the NEO-PI-R have been shown to be predictive of specific personality disorders (Pukrop et al., 2002; Yeung, Lyons, Waternaux, Faraone, & Tsuang, 1993). Scales of neuroticism, Depression and anxiety yield higher scores in depressed patients (Kotov & Bufferd, 2011; Morey, Gunderson, Quigley & Lyons, 2000), and scales measuring reactive or spontaneous aggression yield higher means in patients with impulse control disturbances, antisocial personality disorders (Decuyper, Defruyt & Buschman, 2008) or alcohol dependence (Roberts, Glod, Kim & Hounchell, 2010) than in nonclinical groups. Therefore, scores of Depression and Aggression on personality tests are conceived as models for respective psychopathological symptoms.

Depression and Aggression are considered to belong to different classes of diagnoses according to psychiatric classification systems (DSM-IV and ICD-10) and to different factors in personality inventories (e.g. NEO-PI-R). Yet, there is biochemical and clinical evidence for a relationship between the two constructs.

Since the discovery of neurotransmitter abnormalities as biological markers for psychiatric disorders, a possible common basis of depressive and aggressive symptoms has been discussed in particular on the basis of serotonin (van Praag, 2001; 1996), because low 5-hydroxy-indolamino-acid (5-HIAA) levels had been discovered in the cerebrospinal fluid of violent suiciders (Åsberg, Traskman & Thoren, 1976) and because serotonin agonists and uptake inhibitors tend to reduce symptoms of Depression (Meltzer & Lowy, 1987) as well as of Aggression (Meltzer & Lowy, 1987; O'Neil, Page, Adkins & Eichelman, 1986; Olivier, Mos & Schipper, 1986) and since furthermore abnormal hormone responses to serotonergic challenge tests are correlated with scores on Depression and impulsivity scales. Clinical evidence for overlap is, on the one hand, given by the psychoanalytic view (Abraham, 1911; Mentzos, 1997) that Depression results from Aggression turned inward against the self and, on the other hand, from the observation of depressive as well as aggressive features in patients with major Depression (Greening, Stoppelbein, Luebbe & Fite, 2010; De Rose & Fioravanti, 2010) as well as in alcoholics (Roberts et al., 2010), where subtypes of depressed groups with and without certain aspects of Aggression could be identified.

Both Depression (Mahon, Yarcheski, Yarcheski, & Hanks, 2007) and Aggression (Blair, 2010; Deater-Deckard et al., 2010) are characterized by low tolerance to

frustration which gave rise to the present investigation. The original frustration-aggression hypothesis (Dollard, Miller, Doob, Mowrer, & Sears, 1939) claiming that frustration always leads to Aggression was revised by Miller (1941) who argued that Aggression is only one of the possible responses to frustration which would permit aggressive as well as depressive responses. Therefore, it may be asked if aggressive and depressive responses to frustration are also expected to share common variance like the traits, that is, if they are positively correlated or mutually exclusive.

According to Gray's original Reinforcement Sensitivity Theory (RST) (Gray, 1981), the neurobiological systems BIS (behavioural inhibition system) and BAS (behavioural activation system) reflect reactivity to signals of punishment or nonreward and reactivity to signals of reward or non-punishment, respectively. Although deprivation from positive reinforcers and encounter with negative events both reflect facets of the BIS system, several psychopathological syndromes like antisocial personality disorder, Depression, or drug dependence suggest that positive and negative reinforcers may differ in salience according to type of psychiatric disease. This can be derived from the observation that deficiency of reward is the primary reason for committing criminal acts in antisocial personality disorder (Blair, 2010; Buckholtz et al., 2010) and that high sensitivity to punishment is characteristic of disorders with depressive and anxiety related symptomatology (Gray, 1981). So persons with antisocial personality disorders or drug dependence may react more severely when deprived from their expected rewards, while anxious-depressive persons who, according to Gray (1981), are more susceptible to punishment, would be expected to feel more frustrated when being criticised or confronted with external obstacles suitable to prove their inability to handle challenges.

An additional question would be whether predominantly depressive or aggressive reactions to frustration do not only depend on the personality factors of Depression and Aggression but also on the type of frustrating condition.

A previous instrument investigating different types of responses to frustration is the projective Rosenzweig Picture Frustration Test (PFT) (Rosenzweig, 1941) which also focuses on responses reflecting Depression associated intropunitive and Aggression related extrapunitive responses, but the stimulus material only represents conditions depicting social interactions and no inanimate obstacles and, furthermore, does not distinguish between punishment and nonreward. Also the punishment subscale of the Sensitivity to Punishment and Reward Questionnaire (SPSRQ) by Torrubia, Avila,

Molto, & Caseras (2001) does not address different types of punishment conditions and different types of responses.

Interpersonal disappointments or negative reactions of social partners, for instance, may induce more depressive reactions than frustrations caused by nonhuman obstacles, and conditions imposed by regulations of the police or technical failure may elicit stronger aggressive responses than frustrations deriving from personal interaction with a social partner. Therefore, this source of variance has also got to be considered when analyzing response differences to deprivation from positive and encounter with negative stimulus conditions.

Moreover, it is known that deliberately caused frustrations will elicit stronger aggressive responses than unintentional ones (Dill & Anderson, 1995), so this distinction has also to be taken into account for comparing different stimulus conditions. Therefore, it was considered to construct a questionnaire on daily frustrations (QDF) in a pilot study which permits to discriminate between the two facets of frustration: punishment and nonreward by depressive as well as aggressive reactions, and which relates to human as well as to nonhuman frustrating conditions.

1.3. Alcoholism as Related to Personality Traits and Tolerance to Frustration

Since intolerance to frustration is very pronounced in drug addicts, it was expected to be also particularly high in alcoholics. Furthermore, as outlined above, depressive and aggressive personality traits are expected to be both observed in alcoholics (Roberts et al., 2010). This is supported by Cloninger's theory (Cloninger, 1987) that alcoholics represent two different types of alcoholism: type 1 is characterized by later onset and a predominance of problem drinkers frequently characterized by Depression, whereas type 2 shows high heritability, early onset (before the age of 25), and is associated with antisocial personality. So, it is expected that in a sample of alcoholics both highly depressive and highly aggressive personality traits will be observed.

The drinking habits of alcoholic patients are manifold, just as the reasons for dependent alcohol consumption. The latter may be of social, demographic, behavioral or genetic origin, but it is always an individual composition of causes that leads to alcohol dependence.

Apart from Cloninger´s typology several surveys revealed that personality factors are influenced by heritability to a high degree of about 50 % (Jang, Livesley & Vemon, 1996), which also concerns personality traits that predispose to alcoholism, such as Aggression, impulsivity and sensation seeking but also features of neuroticism, a trait which is marked by low tolerance to everyday stress and experience of negative emotional states such as anxiety, Depression or anger (Franken & Muris, 2006; Gossop & Eysenck, 1983; Kane, Loxton, Staiger & Dawe, 2004; Sher, 1991). Accordingly, it was supposed that persons of the former type tend to drink for enhancing their uncontrolled satisfaction of immediate needs and increasing their self esteem, whereas those prone to neurotic traits will use alcohol as a coping strategy, e.g. to forget about problems and to alleviate worries (Kuntsche, von Fischer & Gmel, 2008; Cooper, Agocha & Sheldon, 2000). Both types have been found to be heavy drinkers among adolescents (Kuntsche, Knibbe, Gmel & Engels, 2005; 2006).

Some studies revealed that the association between personality factors and alcohol dependence is partly mediated by these drinking motives (Tragesser, Trull, Sher & Park, 2008; Littlefield, Sher & Wood, 2010; Kuntsche et al., 2008). These two types of personality related motivations for drinking alcohol may partly be matched to the two types of alcoholics depicted by Cloninger (1987), type 1 being anxious and guided by environmental influences for developing alcohol dependence, type 2, characterized by impulsive uncontrolled behavior, may be genetically predisposed to drink for immediate satisfaction of uncontrollable urges. Thus, different aspects of personality seem to relate to certain aspects of drinking history and drinking behavior (Littlefield et al., 2010; Jackson & Sher, 2006).

Therefore, it was intended to investigate, if there are associations of traits such as impulsivity and Aggression on the one hand, and traits of neuroticism like anxiety and Depression on the other, with features of drinking habits and drinking history, including severity of alcohol dependence as well as liability to relapse after withdrawal.

Another aspect concerns the causal relationship between alcoholism related personality traits and susceptibility to reward. It is well known that heavy drinkers experience feelings of positive affect in situations with rewarding stimuli and that alcohol consumption seems to have rewarding properties for them (Franken & Muris, 2006; Kane et al., 2004; Franken, Muris & Georgieva, 2006; Johnson, Turner & Iwata, 2003; Loxton & Dawe, 2001). But as outlined above, this motive of drinking for enhancement mediates the associations between alcohol abuse and respective personality traits

(Tragesser et al., 2008) and therefore may only apply to a subsample of alcoholics. It was hypothesized that reward sensitive persons would react to frustrations from withdrawal of rewarding stimuli more strongly than to frustrations from stimuli of punishment. So, subtypes of alcoholics would differ in sensitivity to frustration from nonreward and from punishment. Therefore, associations between factors of alcoholism and reactions to nonreward will be compared to those caused by conditions of punishment.

1.4. MAO B AND ITS RELATIONSHIP TO GENETICS, PERSONALITY TRAITS, AND ALCOHOLISM

1.4.1. THE ENZYME MONOAMINE OXIDASE (MAO)

Monoamine oxidases (MAO A and MAO B) are catalyzing enzymes which deaminate biogenic monoamines by an oxidoreduction. They are proteins of the exterior mitochondrial membrane.

Two genetic variants of MAO are represented in different human tissues. Isoform A is primarily found in the thyroid, the female hormonal system, the respiratory tract and adipose connective tissue, whereas isoform B is mainly involved in the metabolism of the adrenal gland, the female reproductive system, the brain and nervous system as well as in the blood and the hematopoietic system, but only in platelets.

MAO A catalyses predominently the substrates serotonin and norepinephrine whereas MAO B is responsible for the metabolism of phenylethylamine and dopamine. Genes for coding both enzymes are located on the short arm of chromosome X (gene map locus Xp11.23).

1.4.2. PSYCHOPATHOLOGY ASSOCIATED WITH PLATELET MAO ACTIVITY

Psychological as well as psychiatric impairment such as conduct disorder, drug abuse, Parkinsons Disease, Attention Deficit Hyperactivity Disorder (ADHD) and Depression as well as alcohol dependence seem to be associated with dysfunctional activity of the MAO B enzyme. There is evidence that platelet MAO B activity is lower in alcohol dependent patients. Therefore low MAO B activity has been supposed to be a marker for alcohol dependence (Cloninger, Bohman and Sigvardsson, 1981), primarily for type

2 alcoholism (von Knorring & Oreland 1996, Oreland, Hallmann & Damberg, 2004; Oreland, Nilsson, Damberg & Hallmann, 2007) characterised by impulsiveness, sensation seeking, criminal offending and antisocial behavior (Cloninger, 1987).

Furthermore, low platelet MAO B activity has been shown to be associated with personality traits of impulsivity (Oreland et al., 2004; Skondras, Markianos, Botsis, Bistolaki & Christodoulou, 2004; Wiberg, Gottfries & Oreland, 1977; Schalling, Edman, Åsberg & Oreland, 1988) and Aggression (Schalling et al., 1988), as has also been shown in rhesus monkeys after intravenous alcohol administration (Wargelius, Fahlke, Suomi, Oreland & Higley, 2010). Low platelet MAO activity is also associated with violent offending (Klinteberg, Oreland, Hallman, Wirsén, Levander & Schalling, 1990), sensation seeking, risk taking and novelty seeking (Fowler, Knorring & Oreland, 1980; Shekim et al., 1989; Reist, Haier, De Met & Chicz-De Met, 1990; af Klinteberg et al., 1990), suicidality (van Verkes et al., 1997), low 5-HIAA levels in CSF and low responses to serotonergic stimulation (Åsberg, 1997; Oreland et al., 1999; Wargelius et al., 2010).

1.4.3. MOLECULAR GENETICS RELATED TO MAO B ACTIVITY

MAO A and MAO B enzymes are coded by two separate closely linked genes on the short arm of the X chromosome. Genetic polymorphisms code for variants which differ in enzyme activity. Three polymorphisms of MAO B which might be relevant for enzyme activity have been identified (Costa-Mallen, Kelada, Costa & Checkoway (2005):

- a C-1,114T in the 5' region,
- a variable number of GT repeats in intron 2,
- and a G/A change in intron 13.

The MAO-B rs1799836 single nucleotide polymorphism (SNP) represents an exchange of adenine to guanine in intron 13 of the MAO B gene. It is of interest because individuals with the A allele display lower enzyme activity in comparison to G allele carriers (Garpenstrand, Ekblom, Forslund, Rylander & Oreland, 2000).

But, on the other hand, Balciuniene, Emilsson, Oreland, Pettersson & Jazin (2002) discovered lower MAO B activity in post-mortem human brains of individuals carrying

the G allele. This may not be contradictory, because it has been stated that platelet MAO activity does not seem to be closely related to brain MAO B activity (Young, Laws, Sharbrough, Weinshilboum, 1986; Winblad, Gottfries, Oreland Wiberg, 1979).
While Pedersen et al. (1993) report a strong genetic influence on platelet MAO activity and a heritability factor of 76%, there are also studies that failed to find an association between the genetic variants of the MAO B gene and differences in MAO B activity (Pivac et al., 2006; Filic et al., 2005).

Genetic variants of the transcription factor AP 2 β also seem to influence MAO B enzyme activity. AP 2 β is known as an important regulator of neural gene expression and neuronal development (Damberg, 2002). The number of repeats of the sequence CAAA, whether it is 4 or 5 repeats, is crucial. In male homozygotes 5 repeats are related to lower MAO B activity in platelets (Damberg, Garpenstrand, Berggård, Åsberg, Hallman, & Oreland, 2000).

1.4.4. Additional Effects on MAO B Activity

Whitfield et al. (2000) and Berggren, Eriksson, Fahlke, Blennow and Balldin (2007) found that smoking but neither acute alcohol use nor lifetime DSM-III-R alcohol dependence seem to have an effect on MAO B enzyme activity measured in platelets. Smoking is supposed to significantly reduce platelet MAO B activity.
Also age and gender were found to influence MAO B activity: The activity increases with age which is more pronounced in females (Veral, Alper, Mentes & Ersöz, 1997).

1.5. The Role of Catechol-O-Methyl-Transferase

1.5.1. Functional significance of COMT

Another enzyme involved in catabolism of the catecholamines epinephrine, norepinephrine and dopamine is the catechol-O-methyl transferase (COMT, gene map locus 22q11.21). This enzyme plays an important role in the regulation of dopamine levels in the brain, particularly in modulating dopamine in the prefrontal cortex (Dreher, Kohn, Kolachana, Weinberger & Berman, 2009).

COMT is expressed in every human and animal organism, primaryly in the brain, the liver and the placenta, as well as in lymphocytes and erythrocytes. It is located in the cell plasma. The polymorphism Val158Met (SNP rs 4680) is responsible for the COMT activity. That is, Val carriers display higher COMT activity than Met carriers in the catabolism of monoamines.

1.5.2. PATHWAYS OF DOPAMINE CATABOLISM

COMT is involved in several steps of dopamine catabolism as can be taken from Figure 1. This also demonstrates that both COMT and MAO B have a role in this process.

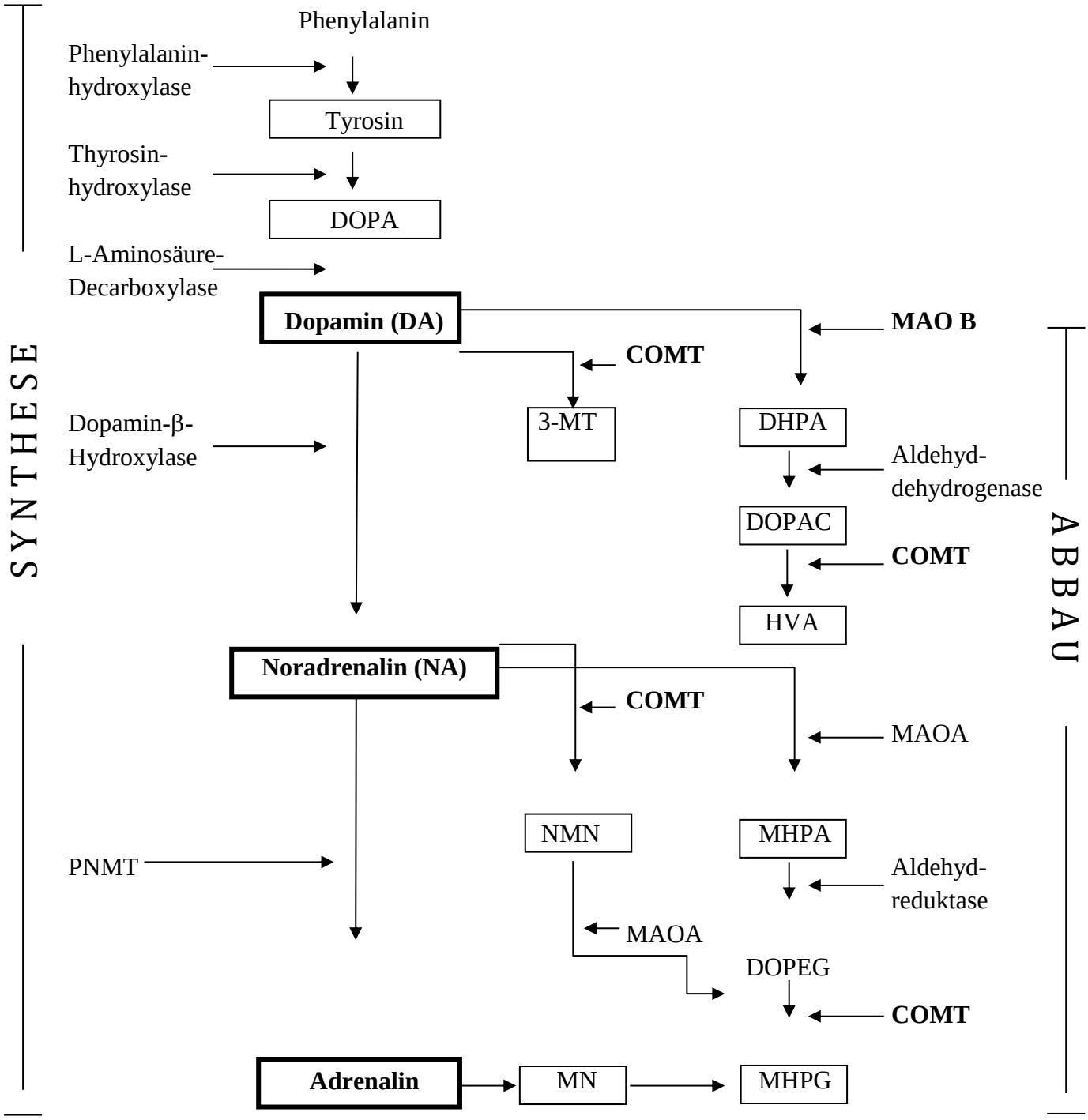

Figure 1 Pathways of Catecholamine Metabolism (Netter & Hennig, 2005)

(DOPA = dihydroxyphenylalanin; 3-MT = 3-methoxytyramin; DHPA = 3,4 dihydroxyphenylacetaldehyde; DOPAC=3,4 dihydroxyphenylacetic acid; HVA = homovanillic acid; NMN = normetanephrine; MN = metanephrine; MHPA = 3,4 dihydroxyphenylglycolaldehyde; DOPEG = dihydroxyphenylglycol; MHPG = 3-methoxy-4-hydroxy-phenylglycol; MAO = monoamine oxidase; PNMT = phenylethanoleamine-N-methyltransferase; COMT = catechol-O-methyltransferase)

In a first step of catabolism dopamine is hydroxylated into norepinephrine with vitamin C as catalyzing coenzyme and norepinephrine is methylated to the neurotransmitter epinephrine which is then inactivated by methylation with the help of the catechol-O-methytransferase. Metanephrine remains as a product. The next step is oxidative deamination by the substrate specific monoamine oxidase (MAO). The resulting aldehyde is oxidated by an aldehyddehydrogenase and the excretion product 3-methoxy-4-hydroxymandelicacid (vanillylmandelic acid) emerges.

1.5.3. THE POLYMORPHISM OF THE COMT GENE AND ITS RELATIONSHIP TO PSYCHOPATHOLOGY

Different gender specific associations have been observed for the genotypes of the COMT gene polymorphism: In males, carriers of the Met/Met variant seem to have a high risk for violent behavior (Tosato et al., 2011), Aggression and anger (Rujescu, Giegling, Gietl, Hartmann & Möller, 2003; Calati et al., 2010; Nedic, Nikolac, Sviglin, Muck-Seler, Borovecki, & Pivac, 2011), negative emotionality and anxiety (Enoch, Xu, Ferro, Harris & Goldman, 2003), higher sensitivity to negative stimuli (Heinz & Smolka, 2006) as well as an association with novelty seeking (Demetrovics et al., 2010) and lower extraversion (Hoth et al., 2006). But they show higher cognitive performance and focused attention (Heinz & Smolka, 2006).

Val/Val carriers in males display higher attention deficits (Heinz & Smolka, 2006; Hamidovic, Dlugos, Palmer & De Wit, 2010; Albaugh et al., 2010) and lower stimulus seeking (Silberschmidt & Sponheim, 2008). They are more often smokers (Nedic et al., 2011) and more extaverted (Hamidovic et al., 2010).

In females, those who carry Val/Val present the highest phobic anxiety (Mc Grath, Kawachi, Ascherio, Colditz, Hunter & De Vivo, 2004). They also seem to have a high risk for schizophrenia (Glatt, Faraone & Tsuang, 2003; Fan et al., 2005).

Val/Met carriers of each gender exhibit the highest scores on agreeableness (Harris, Wright, Hayward, Starr, Whalley & Deary, 2005).

As shown above the catabolic enzymes MAO B and COMT are salient regulators of the dopaminergic system. Since disturbances of the dopamine equilibrium seem to be associated with type 2 acloholism as well as with personality traits like impulsivity and Aggression, which are more often apparent in alcohol dependent persons, the associated

polymorphisms MAO B intron 13 (A/G) and COMT Val158Met were examined with respect to their relationships with relevant personality traits in the present study on alcohol dependent patients.

2. QUESTIONS INVESTIGATED

2.1. THE DEVELOPMENT OF A QUESTIONNAIRE ON DAILY FRUSTRATIONS (PILOT STUDY = STUDY 1)

2.1.1. Do the scales of the QDF reveal internal consistency?

2.1.2. Is there a difference in means of responses to the items representing deprivation from positive reinforcers (pos) and those representing the encounter with negative events (neg), and does this difference depend on the type of stimulus condition (intentional/unintentional and human or nonhuman source)?

2.1.3. Is there a positive, zero, or negative correlation between depressive and aggressive responses to the same set of item categories?

2.2. RESPONSES TO FRUSTRATION AS RELATED TO PERSONALITY TRAITS (STUDY ON THE SAMPLE OF ALCOHOLICS = STUDY 2)

2.2.1. Are correlations between the trait of Depression higher with the depressive QDF responses than with the aggressive ones and is Aggression more correlated to the aggressive QDF responses than to the depressive ones?

2.2.2. Do responses to nonreward (pos) show stronger associations with the trait of Aggression than responses to punishment (neg) and do responses to punishment (neg) show stronger correlations with the trait of Depression than responses to nonreward (pos)?

2.2.3. Do the results reveal higher responses to human than to nonhuman conditions of the QDF scales in depressive alcoholics and is this relationship absent in aggressive alcoholics?

2.3. PERSONALITY TRAITS AND RESPONSES TO FRUSTRATION AS RELATED TO FACETS OF ALCOHOLISM

2.3.1. Are certain factors of habits and history of alcohol addiction related to predisposing personality traits such as impulsivity, anxiety, Depression and Aggression?

2.3.2. Are certain factors of habits and history of alcohol addiction more strongly associated with frustrations from nonreward than with frustrations caused by punishment?

2.4. MAO B Activity and Genetics as Related to Personality Traits and Responses to Frustration

2.4.1. Are there relationships between MAO B activity in platelets, the polymorphism of the MAO B gene und their interaction on the one hand and sensation seeking associated with MAO B activity on the other?

2.4.2. Are there modifications of these relationships by the COMT Val158Met polymorphism?

2.5. Activity and Genetics of MAO B and Aspects of Alcoholism

2.5.1. Is platelet MAO B activity related to factors of alcohol history?

2.5.2. Is the polymorphism of the MAO B gene related to factors of alcohol history?

3. METHODS

3.1. SAMPLES

3.1.1. PILOT STUDY (STUDY 1)

A sample of 50 healthy German persons (males n = 17; females n = 33; age: median = 29 years; range = 20–70) was recruited (a) among undergraduate Psychology students from the University of Giessen, Germany (n = 35). The experimenter informed the undergraduates before they entered the auditorium to a plenary Psychology lecture. Since Psychology students in Giessen have to prove that they have served as experimental subjects for altogether 30 hours, only undergraduates participated who still needed additional hours for their records. (b) These participants were supplemented by acquaintances of the experimenter and their relatives (n = 15) who were personally approached and received a bar of chocolate as a reward for participating. All subjects were instructed to fill in the QDF which for reasons of data protection was only labeled by a number and had to be returned anonymously in a closed envelope to a box in the secretary's office or by mail. The study was approved by the ethics committee of the Medical Faculty of the University of Giessen, Giessen, Germany.

3.1.2. SAMPLE OF ALCOHOLICS (STUDY 2)

The sample of patients (age: mean = 47.93; SD = 9,00; range = 27–69) included in study 2 had to fulfill the following criteria: alcohol abuse as defined by the ICD-10 code F10.2 according to the WHO, diagnosed by an experienced psychiatrist, male gender, age > 18 years, no additional substance dependence, sufficient knowledge of the German language. Patients who additionally suffered either from schizophrenia, schizotypal, or delusional disorder or from bipolar affective disorder according to the WHO ICD-10 classification were excluded, as well as patients who were treated with MAO inhibitors. Patients were recruited on the one hand from two German psychiatric hospitals (University Hospital Giessen-Marburg and Vitos Hospital Giessen), after acute withdrawal, and on the other hand from two outpatient institutions for psychotherapy of alcohol addiction after withdrawal in one of the two psychiatric hospitals. They were asked to give informed consent and were rewarded by 20 Euro

after completion of the session. The study was approved by the ethics committee of the Medical Faculty of Giessen University, Giessen, Germany.

3.2. QUESTIONNAIRES

3.2.1. CONSTRUCTION OF THE QUESTIONNAIRE ON DAILY FRUSTRATIONS (QDF)

A total of 32 frustrating events, including topics such as partnership, money, work, and social contacts, had been collected and presented in 2-3 short sentences each. 16 of them represent deprivation from positive reinforcers (rewards), and 16 refer to the confrontation with negative reinforcers (punishments). Within each set of stimuli, 8 events are caused by external, nonhuman faults, 8 by humans in a social situation. The 8 frustrations elicited by humans are divided into 4 situations, each in which a person deliberately (h++) or unintentionally (h+) causes the frustration. The sum of h++ and h+ is labelled H. The events caused by nonhuman faults are labelled NH. This results in four item categories named posNH, posH, negNH, and negH, or in 8 categories including the additional groups of items posh+, posh++, negh+, and negh++.

Each situation is followed by 6 distinct emotional reactions, which have to be marked on a 0 to 10 point Likert scale of 0 = “does not apply to me at all” to 10 = “applies to me very much”. This results in altogether 32 x 6 = 192 items. The 6 responses always consist of two reactions labeled as depressive, aggressive, and neutral each. The number of the particular reaction is attached to the label of the scale as 1–6. This yields 8 x 6 = 48 scales altogether.

The full set of 32 situations of the questionnaire, translated from the original German version in the version given to males, is attached in the appendix. Sample situations for each of the categories described above are given below with category labels in bold letters.

(2) You are queuing at a box office of a cinema with the intention to see a movie premiere that you have been waiting for since a long time. Finally, it is your turn, but you are informed that all tickets are sold out **(posNH)**.

(4) You have been looking forward very much to a weekend trip with your girl friend/partner. Since a relative of hers has become sick and asks her for help, she has to cancel the trip **(posh+)**.

(7) You have made every effort to prepare a pleasant birthday party for your friends. Unfortunately, most of them are in a bad mood and therefore all of them leave the party very early, giving different excuses **(posh++)**.

(16) Just for a moment, you are leaving your flat without taking a key with you while the door remains open. But a heavy blast shuts the door and you are locked out **(negNH)**.

(17) You are preparing a sophisticated meal while you receive a telephone call from a friend. You are so preoccupied with your conversation that in the kitchen the food is burning **(negh+)**.

(20) At work you always give your very best and you are also very conscientious. Yet, your boss always criticizes you for working too slowly or making too many mistakes **(negh++)**.

Reactions following each of the 32 situations:

(1) You tell yourself: "This always happens only to me" **(depressive)**.
(2) You consider how to make the best of it **(neutral)**.
(3) You become angry and start swearing **(aggressive)**.
(4) You think: "So what, such things just happen" **(neutral)**.
(5) You blame yourself for this event **(depressive)**.
(6) You blame everybody else **(aggressive)**.

For example, "item 20.4" means reaction 4 (You think: "So what, such things just happen.") as a response to item 20.

3.2.2. QUESTIONNAIRES APPLIED IN STUDY 2

The patients were asked to fill in the following personality questionnaires:

1) the newly constructed Questionnaire on Daily Frustrations QDF (Baars, Müller, Gallhofer & Netter, 2010),
2) a questionnaire on history and habits of drinking (Department of Psychology and Psychiatric Hospital Giessen Medical School, unpublished);
3) Alcohol Craving Questionnaire ACQ (Singleton & Henningfield, 1994),
4) the Questionnaire on Factors of Aggression FAF (Hampel & Selg, 1975),
5) the General Scale on Depression ADS (Hautzinger & Bailer, 1993).

Since Aggression is closely related to impulsivity and Depression to anxiety, the following questionnaires were added for increasing discriminant construct validity:

6) Eysenck's Impulsivity Scale I7 (Eysenck & Eysenck, 1978),
7) the Sensation Seeking Scales SSS-V by Zuckerman, Eysenck & Eysenck (1978),
8) the Interaction Anxiety Questionnaire IAF by Becker (1997),
9) the Sensitivity to Punishment and Reward Questionnaire SPSRQ by Torrubia et al. (2001),
10) the Impulsivity Scales BIS-11 by Patton, Stanford & Barratt (1995).

3.3. OBJECTIVE MEASUREMENT OF IMPULSIVITY (GO/NOGO DISCRIMINATION TASK)

This aims at determining behavioral impulsivity by measurement of reaction times and commission errors (false alarms). The patients were presented the reaction stimuli "Y" and "O" in a randomized order after having read the following instructions:

"This game is about reacting to one of two different stimuli as fast as possible but also as accurately as possible-and not to respond to the other stimulus. As soon as you see a "Y" on the screen you should push the left mouse button once. You are not allowed to react to an "O". Continue by pushing the "start" button which will be followed by the next stimulus presentation"

The duration of the stimulus presentation was maximally 800 ms. Responses after a longer period were counted as omission errors. The inter-stimulus interval varied randomly between 1100 and 3000 ms.

The Go/NoGo discrimination task consists of three parts. During the first phase 10 stimuli without evaluation were presented. In the second phase, which like the last phase followed without interruption of the game, 80 (40 Go and 40 NoGo) stimuli were presented for determination of the 90. percentile of the mean reaction time to the "Go" stimuli. This is the time recorded for 36 (90%) of the 40 responses to the stimulus "Y".

Before the start of part three, which also consisted of 80 (40 Go and 40 NoGo) stimuli, the maximum duration of "Y" and "O" presentations was reduced to the time of the 90. percentile previously determined for the respective participant.

If the patient did not respond to a "Y" within his individual maximal reaction time this was counted as an omission error (OE), the false responses to an "O" were counted as commission errors (CE).

3.4. Determination of MAO B Activity (Description by Jaanus Harro and Diva Eenso, University of Tartu, Estonia)

Platelet MAO (pl-MAO) activity was measured in platelet-rich plasma by a radioenzymatic method with [^{14}C]-β-phenylethylamine (β-PEA) ("PerkinElmer") as substrate, as described by Hallman et al. (1987). Blood samples were collected by antecubital venipuncture into 4.5 ml Vacutainer® tubes containing EDTA as an anticoagulant. The samples were centrifuged (Jouan BR4i) for 10 min with 800 rpm (114 g), obtaining platelet-rich plasma. Part of the obtained plasma (100 µl) was used for counting platelets with Sysmex SE-9000 in the biochemical laboratory of the Department of Differential and Biological Psychology at the University of Giessen. One ml of platelet-rich plasma was stored at –80°C until the measurement of MAO activity. After completion of data collection the samples were sent by express on dry ice to the certified clinical laboratory at the University of Tartu. After melting the platelet-rich plasma on ice, platelets were sonicated with Bandelin Sonopuls Ultrasonic Homogenizer HD2070 4 x 10 s with intervals for 5 s at 4°C. Then, 50 µl of 0.1 mM [^{14}C]-β-PEA was mixed with 50 µl of sonicated plasma, following 4 min incubation in 37°C water bath. After that, 30 µl of 1.0 M HCl was added to stop the reaction and all

the tubes were put onto an ice bath for another 10 minutes. After adding 750 µl solution of toluene and ethylacetate (1:1), all the samples were mixed on a shaker (Vibromax 110, Heidolph) for 30 s at 1700 rpm, and thereafter centrifuged for 5 min at 2000 rpm. From the organic phase 500 µl was pipetted into vials with 8 ml of scintillation liquid (Optiphase "HiSafe"3, Wallac). For standard samples 50 µl of 0.1 mM [^{14}C]-β-PEA was added to 8 ml of scintillation cocktail. All the samples were analysed in duplicate and blindly and corrected using a reference sample. Radioactivity was measured in a β-counter (Wallac Guardian 1414 Liquid Scintillation Counter). MAO activity was calculated using the following formula: [the amount of the substrate (nmol) x β-count of the sample (cpm) x 1.5]/[β-count of the standard (cpm) x incubation time (min) x the count of platelets in 50 µl of platelet-rich plasma (10^{10} of platelets)], and expressed as nmol of substrate oxidized per 10^{10} platelets per min (nmol x min^{-1} x 10^{10} platelets^{-1}).

3.5. Determination of Genetic Polymorphisms (Description by Martin Reuter and Christian Montag, University of Bonn, Germany)

3.5.1. MAO-B rs1799836

DNA was extracted from whole blood samples. Automated purification of genomic DNA was conducted by means of the MagNA Pure® LC system using a commercial extraction kit (MagNA Pure LC DNA isolation kit; Roche Diagnostics, Mannheim, Germany). Genotyping of MAO-B rs1799836 single nucleotide polymorphism (SNP) (an adenine to guanine transition in intron 13 of the MAO-B gene located on the X-chromosome) was performed by real time polymerase chain reaction (RT-PCR) using fluorescence melting curve detection analysis by means of the Light Cycler System (Roche Diagnostics, Mannheim, Germany). The PCR run comprised 48 cycles of denaturation (95°C, 0 s, ramp rate 20°C s-1), annealing (57°C, 18 s, ramp rate 20°C s-1), acquisition of the fluorescence signal (57°C, 1 s, ramp rate 20°C s-1) and extension (72°C, 18 s, ramp rate 20°C s-1) which followed an incubation period of 13 min (95°C) to activate the Taq DNA Polymerase of the reaction mix (QuantiTect Probe PCR Kit, Qiagen). After amplification a melting curve was generated after an initial denaturation for 20 s at 95°C by keeping the reaction time at 40°C for 20 s and then heating slowly to

80°C with a ramp rate of 0.2°C s-1. The fluorescence signal was plotted against temperature to yield the respective melting points (Tm) of the two alleles. Tm for the A allele was 56.5°C and 63.2°C for the G allele.

The primers and hybridization probes used (TIB MOLBIOL, Berlin, Germany) were as follows:

- forward primer: 5'- CTCTTATACCACAGGAGAAAGACC -3';
- reverse primer: 5'- CATGCAGGATCTGAAATGAA -3';
- sensor [G] hybridization probe: 5'- AATAGCAAAAGCGACACCATCTT - fluorescein-3': anchor hybridization probe: 5'-LCRed640-CTAATCTGCTCCCTAAAGGACTAAGTAACTG-phosphate 3'.

3.5.2. COMT VAL158MET

DNA was extracted from whole blood samples. Purification of genomic DNA was performed with a standard commercial extraction kit (High Pure PCR Template Preparation Kit; Roche Diagnostics, Mannheim, Germany). Genotyping of the two single nucleotide polymorphisms (SNPs) was performed by real time PCR using fluorescence melting curve detection analysis by means of the Light Cycler System (Roche Diagnostics, Mannheim, Germany). Details of the PCR protocols were described elsewhere (Reuter, Peters, Schroeter, Koebke, Lenardon & Bloch, 2005). The primers and hybridization probes used (TIB MOLBIOL, Berlin, Germany) were as follows:

- forward primer: 5 _ -GGGCCTACTGTGGCTACTCA-3 _ ;
- reverse primer: 5 _ -GGCCCTTTTTCCAGGTCTG-3 _ ;
- anchor hybridization probe: 5 _ -LCRed640-TGTGCATGCC-TGACCCGTTGTCA-phosphate-3 _ ;
- sensor hybridization probe: 5 _ -ATTTCGCTGGCATGAAGG-ACAAG-fluorescein-3 _ .

3.6. STATISTICAL EVALUATION

3.6.1. STUDY 1

For reliability analysis, item-total-correlations and Cronbach's Alpha were computed for each of the 48 scales (Table 2 in the results section). After applying the Levine test in order to test for homogeneity of variances, t-tests for independent groups were used for testing differences in means between males and females and and t-tests for dependent samples were applied for testing differences between means of corresponding responses given to items representing deprivation from positive and application of negative reinforcers within human and nonhuman categories. After having tested the scales for normal distribution of item responses by the Kolmogorov-Smirnov test, Pearson correlations were computed for analyzing the relationships between corresponding responses to categories of nonreward and punishment and between aggressive and depressive responses. These correlations are merely reported on a descriptive level using an alpha level of .05 without alpha adjustment. Bonferroni corrections of significance levels were, however, performed for the t-tests.

3.6.2. STUDY 2

3.6.2.1. Computation of Personality Factors

A principal component analysis with varimax rotation was performed on the questionnaire scales in order to identify broader factors of Depression and Aggression related traits. Two major factors emerged representing Depression and Aggression beside two other factors identified as impulsivity and anxiety. Factor scores for each participant were formed by adding the z-transformed values of the respective scales comprising each of the factors (loadings of scales included are given in parentheses):

- Anxiety: subscale fear of psychological and physical injury (.690) and subscale fear of situations of social probation (.922) of the IAF; punishment subscale of the SPSRQ (.813);
- Impulsivity: impulsivity subscale of the I 7 (.833); disinhibition subscale of the SSS-V (.774); motor impulsivity subscale of the BIS-11 (.784);

- Aggression: subscale spontaneous aggression (.827); subscale reactive aggression (.912) of the FAF;
- Depression: General Depression Scale ADS (.910); subscale auto aggression of the FAF (.828).

3.6.2.2. Factors of Alcohol History

Another principal component analysis with Varimax rotation was performed to obtain features of alcoholism, taken from six Likert type scale items of the alcohol questionnaire. Three factors emerged composed of the following variables (loadings are given in parentheses):

- F1-duration of alcohol dependence: age of onset (-.906); years of dependence (.905);
- F2-alcohol consumption/intake: glasses of beer/day consumed before abstinence (-.724); glasses of spirits/day (liquor/cocktails) consumed before abstinence (.911); (glasses of wine did not load on any of the three factors)
- F3-number of detoxifications: number of clinical detoxifications (.984) indicating liability to relapse

Factor scores were obtained by adding up z-values of the respective scales and dividing them by the number of scales entering into that particular factor. Scales included had to show substantial loadings (> .600) on only one of the factors. Those scales showing loadings on one or more additional factors (> .300) were not included.

3.6.2.3. Internal Consistencies of QDF Scales in Study 2

In order to obtain the scales of the four QDF categories (nonreward by human and nonhuman frustration and punishment by human and nonhuman frustration), items with corrected item-total-correlations below r = .30 were excluded in this clinical sample. After having added the remaining scores of each person per category and reaction, each sum was divided by the number of the remaining items forming the scales to obtain comparable scale scores ranging from 0 to 10. Responses 2 and 4, the neutral reactions, will not be considered in the present evaluation at all. Cronbach´s alphas representing internal consistencies are listed in Table 2 in the results section.

3.6.2.4. Relationships between Questionnaire Scales in Study 2

Pearson correlations were computed between the QDF response scales and the personality clusters representing the traits of Depression and Aggression.

Differences between correlation coefficients were tested by z-tests (t-tests applied to z-transformed correlation coefficients). Bonferroni adjustment of significance levels was performed separately for each set of 6 correlations (6 response scales) with each of the two personality traits. Partial correlations were computed in case of covariates assumed to cause confounding.

Pearson correlations were also computed for describing the relatiosnships between the three factors of alcoholism, the ACQ score and the four personality factors as well as the response scales of the QDF.

Partial correlations were computed in case of covariates assumed to cause confounding.

Because of the pilot character of the study with the new QDF, correlations will be presented on the descriptive level as well as by indicating significance after alpha adjustment for multiple testing.

3.6.2.5. Definition of Independent and Dependent Variables and Analyses of Group Comparisons for Questions 2.4./2.5.

Independent variables were defined ast as follows:

- classes of MAO B activity:
  - low: < 5.5 nmol x min^{-1} x 10^{10} $platelets^{-1}$
  - medium: 5.6-7.9 nmol x min^{-1} x 10^{10} $platelets^{-1}$
  - high: > 8.0 nmol x min^{-1} x 10^{10} $platelets^{-1}$
- intron 13 single nucleotide polymorphism of the MAO B gene (A/G)
- COMT Val158Met polymorphism (ValVal/ValMet/MetMet)

Dependent variables for the analysis of the effects of biological markers:

- Go/NoGo experiment: reaction time (90th percentile of individual performance)
- Impulsivity : Barratt Impulsivity Scale BIS 11 (motor and cognitive impulsivity)
- Aggression: Freiburg Aggression Inventory FAF (Spontaneous Aggression)
- Novelty Seeking: Sensation Seeking Scales SSS (experience seeking)
- MAO B activity in platelets

(A regression analysis had revealed that number of cigarettes smoked per day had a negative and age a positive effect on the level of MAO B activity and that up to day 30 after the end of detoxification but not for longer periods there was a positive correlation between number of days since detoxification and MAO B levels. But the residuals computed in a multiple regression for all three variables did not differ when including or excluding time since detoxification, therefore all analyses with MAO B levels were performed using only age and number of cigarettes as covariates).

3.6.2.6. Testing the Effect of the Biological Markers

Univariate analyses of variance were computed to compare group differences of MAO B intron 13 polymorphism A and G concerning means of reaction times in the Go/NoGo task as well as platelet MAO activity and personality traits. This evaluation was also used to compare group differences in classes of platelet MAO activity concerning means of reaction times in the Go/NoGo task and personality traits.

Furthermore**,** two way analyses of variance with the alleles of the MAO B and COMT gene as well as with the polymorphisms and classes of MAO B activity as independent factors were computed with respect to psychological variables as dependent measures and with age and numbers of cigarettes smoked used as covariates, where appropriate. All statistical analyses were performed by the SPSS Versions 11.5 and 17.0.

3.7. PROCEDURE IN STUDY 2

3.7.1. RECRUITMENT OF PATIENTS

In a first step the potential participants were asked by their physicians, in case they were hospitalized, or their psychotherapists when they were recruited from outpatient institutions, for their written consent to take part in the study. They were informed that the examination includes different questionnaires, a computer task and a venipuncture for drawing 10 ml of blood for genetic and enzymatic screening. They were informed that after the examination they should receive a monetary reward of € 20,00. In case of consent patients gave their private phone number for further contacts.

3.7.2. PROCEDURE ON THE DAY OF TESTING

Each experiment started between 12.00 and 15.00 p.m. to ensure comparable blood levels of hormones following a circadian rhythm such as cortisol or testosterone, which are assumed to influence Mao B activity. With regard to blood glucose, the patients were not allowed to eat or drink, except water during the test procedure. Therefore, venipuncture was scheduled before the last part of the experiment, i.e. at least 90 minutes after the start.

At the start of the experiment participants were informed about data protection and the procedures to be performed during this test and were asked to give written informed consent (see attachment).

Then patients were asked to change their seat in order to perform the computerized Go/NoGo discrimination task.

After that they continued to fill in the personality questionnaires in the order listed under 3.2.2. which took about 2 hours.

For the analysis of MAO B enzyme activity and for detecting genetic polymorphisms 10 ml of blood were then drawn by venipuncture from the non-dominant arm.

The samples were carried to the laboratory and treated for further analysis as described in section 3.4..

A part of the blood was separated, frozen and sent to the laboratory in Bonn after termination of the data collection.

Finally, the participants filled in further questionnaires that are not treated in the present discourse and after that received their monetary reward.

4. RESULTS

4.1. THE QUESTIONNAIRE ON DAILY FRUSTRATIONS (STUDY 1)

In order to test if gender could operate as a confounder, sex differences were tested for all 48 scales. They were found to be significant only in scales posh3++ and posh4++ (Table 1), that is, males feel more anger and females are more relaxed or forgiving in conditions of being deliberately deprived from a positive reinforcement by another person. Since these were the only differences observed between the male and female sample and since the male sample was very small anyhow, further evaluations will not take gender into account.

Table 1

Gender differences in the subscales of the QDF (means, SD, SEM, and significance of differences P).

Scales	Mean		SD		SEM		P		Mean		SD		SEM		P
	Male	Female	Male	Female	Male	Female			Male	Female	Male	Female	Male	Female	
posNH1	2.57	3.46	2.32	2.71	0.56	0.47		negNH1	3.27	4.65	2.28	2.82	0.55	0.49	
posNH2	6.80	6.34	2.16	1.87	0.52	0.33		negNH2	7.08	7.00	2.31	1.89	0.56	0.33	
posNH3	4.15	4.68	2.11	2.35	0.51	0.41		negNH3	5.37	6.46	2.19	2.28	0.53	0.40	
posNH4	4.71	4.17	1.66	1.69	0.40	0.29		negNH4	4.23	3.19	1.97	1.85	0.48	0.32	
posNH5	2.14	1.95	1.23	1.23	0.30	0.21		negNH5	4.51	4.69	1.20	1.96	0.29	0.34	
posNH6	4.38	4.53	1.88	1.87	0.46	0.33		negNH6	2.32	2.45	1.23	1.88	0.30	0.33	
posh+1	1.91	3.00	2.07	2.67	0.50	0.46		negh+1	2.43	3.09	1.98	2.54	0.48	0.44	
posh+2	7.07	7.40	1.98	1.55	0.48	0.27		negh+2	6.53	6.75	2.16	1.80	0.52	0.31	
posh+3	1.94	2.69	1.66	1.89	0.40	0.33		negh+3	3.24	3.82	2.02	2.23	0.49	0.39	
posh+4	6.06	5.37	1.96	1.59	0.47	0.28		negh+4	4.75	4.28	1.77	1.64	0.43	0.29	
posh+5	1.13	0.94	1.23	1.22	0.30	0.21		negh+5	3.16	3.35	1.14	1.66	0.28	0.29	
posh+6	2.09	2.02	1.65	1.57	0.40	0.27		negh+6	4.50	4.67	2.08	1.82	0.51	0.32	
posh++1	1.82	2.54	1.61	2.14	0.39	0.37		negh++1	1.47	2.37	1.67	2.25	0.40	0.39	
posh++2	6.69	6.80	1.80	1.70	0.44	0.30		negh++2	6.24	5.89	2.58	2.19	0.63	0.38	
posh++3	2.38	3.48	1.25	1.74	0.30	0.30	*	negh++3	5.53	5.80	2.18	2.37	0.53	0.41	
posh++4	4.97	3.77	1.90	1.76	0.46	0.31	*	negh++4	2.07	1.99	1.45	1.49	0.35	0.26	
posh++5	3.63	3.55	1.46	1.72	0.35	0.30		negh++5	2.28	2.87	1.59	1.93	0.39	0.34	
posh++6	4.10	4.48	2.05	1.50	0.50	0.26		negh++6	7.41	7.43	1.62	1.48	0.39	0.26	

* P<.05; pos/neg = withdrawal of positive/application of negative reinforcers; NH/H = nonhuman/human sources of frustration, h+/h++ unintentional/deliberate frustration by humans; numbers 1–6 see reactions 1–6 to QDF scales.

4.1.1. INTERNAL CONSISTENCY OF SUBSCALES (QUESTION 2.1.1.)

Table 2 shows the reliability analyses of the QDF scales for study 1.

Table 2

Cronbach's alpha of the QDF subscales "positive" and "negative" for study 1 (legend see Table 1).

Scales	Alpha	Scales	Alpha
posNH1	.9441	negNH1	.9387
posNH2	.8473	negNH2	.9000
posNH3	.8882	negNH3	.9215
posNH4	.7206	negNH4	.8764
posNH5	.5863	negNH5	.7432
posNH6	.7596	negNH6	.8192
posh+1	.8601	negh+1	.8205
posh+2	.7065	negh+2	.7389
posh+3	.6580	negh+3	.7122
posh+4	.4505	negh+4	.4931
posh+5	.6574	negh+5	.4453
posh+6	.4472	negh+6	.4882
posh++1	.7678	negh++1	.8645
posh++2	.5079	negh++2	.7667
posh++3	.6381	negh++3	.7836
posh++4	.6712	negh++4	.5507
posh++5	.4393	negh++5	.6273
posh++6	.5742	negh++6	.4716
posH1	.9014	negH1	.9104
posH2	.7850	negH2	.8662
posH3	.8189	negH3	.8334
posH4	.7473	negH4	.6379
posH5	.6693	negH5	.7439
posH6	.6573	negH6	.6991

For most of the scales Cronbach's Alpha reveals acceptable internal consistencies. For this analysis, also items with corrected item-total-correlations below r = 0.30 were retained in order to keep the parallel structure of the questionnaire and for considering face validity. They will, however, be eliminated for the validation of the questionnaire in the clinical sample of study 2. It is obvious that the shorter 4 item scales show lower reliabilities than the longer ones.

(For descriptive means and standard deviations see Table 4 in the results section)

In study 2 a new reliability analysis was performed by computing item-total-correlations and Cronbach's Alpha for each of the QDF scales. Items with corrected item-total-correlations below r = 0.30 were eliminated (items deleted: 1.1; 2.4; 3.6; 4.6; 8.5; 8.6; 10.6; 11.5; 14.5; 14.6; 15.5; 16.6; 17.5; 17.6; 18.6; 19.5; 19.6; 20.6; 21.5; 21.6; 22.6; 23.5; 24.5; 24.6; 25.5; 26.6; 28.5; 32.5). In order to keep the scales comparable after elimination of several items, response scales were divided by the number of remaining items so that scores ranged between 1 and 10 on each of the 48 Likert scales.

Table 3 shows the reliability analyses of the QDF scales for study 2.

Table 3

Reliability coefficients (Cronbach´s Alpha) of the QDF scales for study 2 (legend see Table 1).

Scales	Alpha	No. of items included	Scales	Alpha	No. of items included
posNH1	,9397	8	negNH1	,9606	8
posNH2	,7956	8	negNH2	,8647	8
posNH3	,8993	8	negNH3	,9256	8
posNH4	,7641	7	negNH4	,8580	8
posNH5	,7522	6	negNH5	,7498	6
posNH6	,7674	8	negNH6	,6186	4
posH1	,9163	7	negH1	,9108	8
posH2	,8504	8	negH2	,8665	8
posH3	,8016	8	negH3	,8475	8
posH4	,7416	8	negH4	,7744	8
posH5	,7173	5	negH5	,7131	3
posH6	,6104	3	negH6	,7240	3

4.1.2. Comparison between Deprivation from Positive and Encounter with Negative Reinforcements according to Stimulus Conditions (Question 2.1.2., Study 1)

Means of responses to the two types of frustration, separated according to nonhuman and human conditions are depicted in Figure 2.

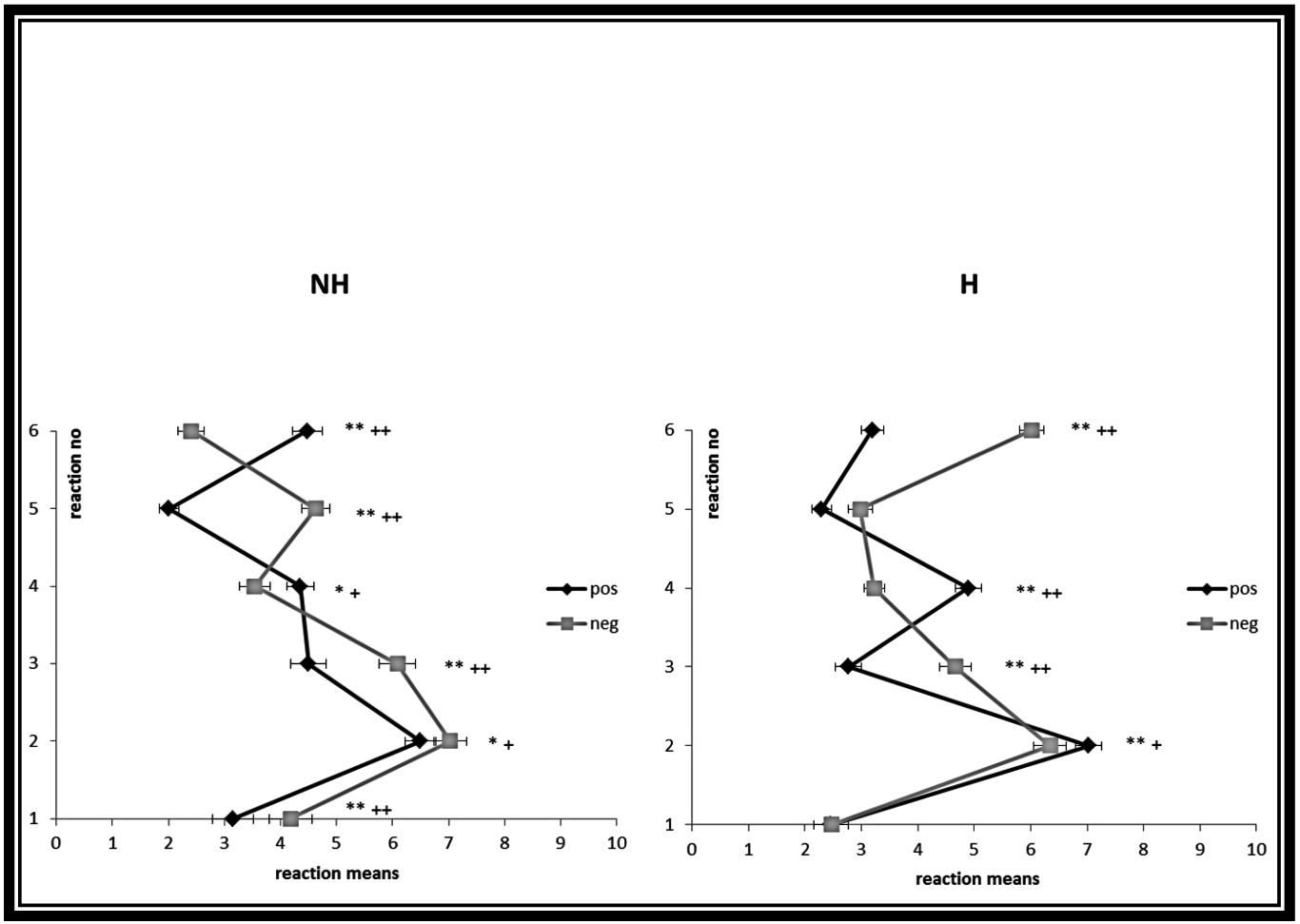

Figure 2 Mean reactions + SEM to withdrawal of positive reinforcers (pos) and encounter with negative reinforcers (neg) in nonhuman (NH, (a)) and human (H, (b)) conditions of frustration (1–6 see responses to QDF scales in Section 2.1., 1 + 5 = depressive, 3 + 6 = aggressive, and 2 + = indifferent responses; *P < .05; **P < .01 before Bonferroni adjustment; $^{+}$P < .05; $^{++}$P < .01 after Bonferroni adjustment of significance level).

Nearly all t-tests performed for comparisons between means of the "positive" and "negative" frustration scales within each of the corresponding reactions for nonhuman as well as for human sources of frustration revealed significant differences.

The most prominent finding is that in nonhuman conditions of frustration (NH) people tend to blame others (response 6) more when deprived from anticipation of reward (pos) than when frustrated by obstacles (neg), whereas respective conditions caused by humans show the opposite pattern. This difference remains significant on the 1% level of significance after Bonferroni correction. In condition NH, blaming oneself as opposed to blaming others is more pronounced when confronted with being blamed or insulted (neg) than when deprived from reward (pos), a difference which also remains significant after alpha adjustment.

Reactions to intentional and unintentional frustration caused by social partners are depicted in Figure 3.

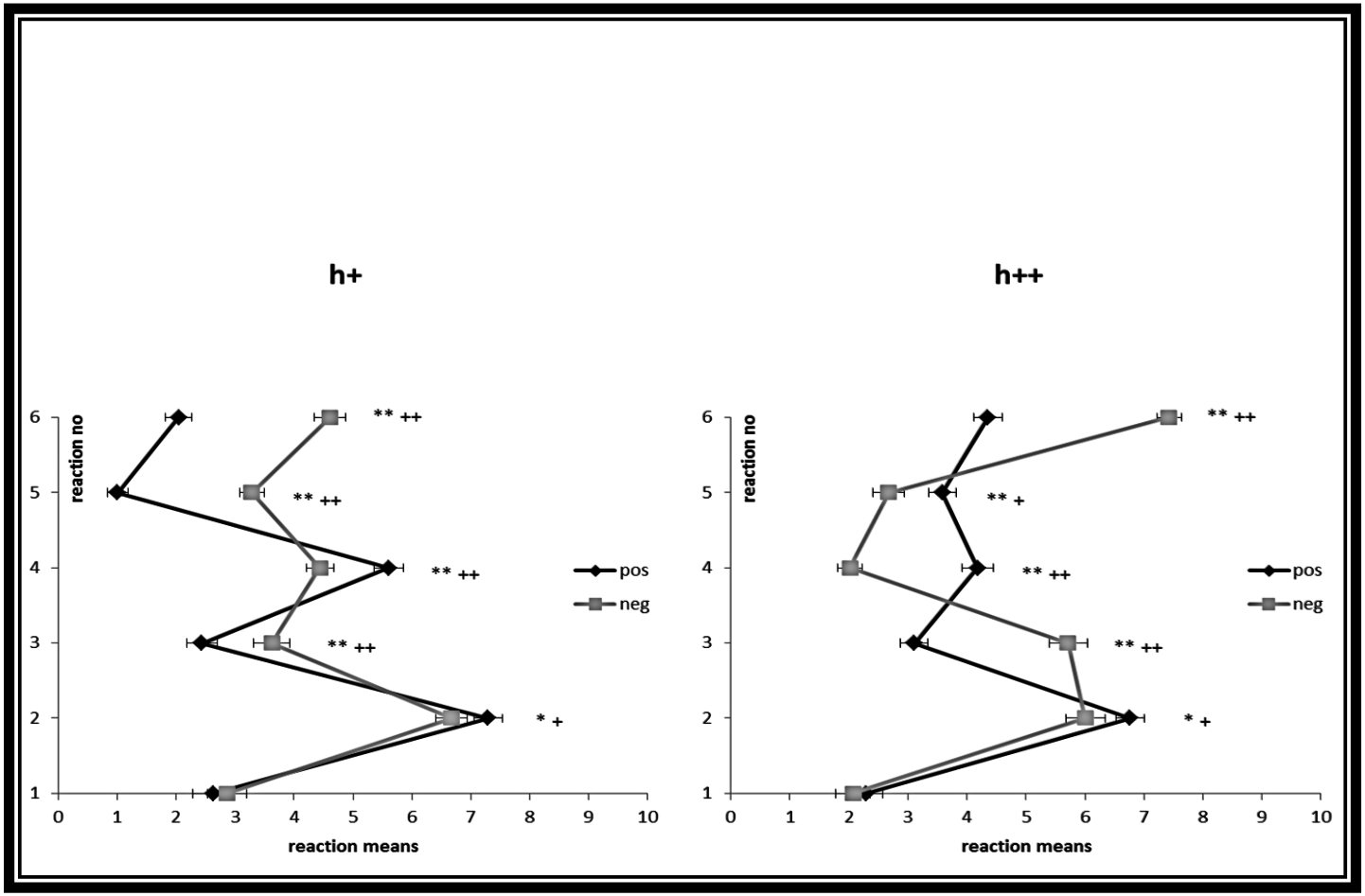

Figure 3 Mean reactions + SEM to withdrawal of positive reinforcers (pos) and encounter with negative reinforcers (neg) in conditions of unintentional (h+, (a)) and deliberate (h++, (b)) frustration by humans (*P < .05; **P < .01 before Bonferroni correction; $^{+}$P < .05; $^{++}$P < .01 after Bonferroni adjustment of significance levels).

Comparing the profiles of the corresponding scales of "positive" and "negative" frustrations within the categories of deliberate (h++, Figure 3(a)) and unintentional human frustrations (h+, Figure 3(b)), it can be seen that the course of the diagrams for "positive" and "negative" frustrations are very similar for unintentionally as well as for deliberately elicited frustrations. However, they differ markedly for intensity of reactions 3 (becoming angry) and 6 (blame everybody else) in the frustrations caused deliberately, that is, intentionally inflicted aversive social acts elicit more aggressive responses than denial of expected rewards. Since differences between the h+ and h++ scales are not very pronounced with respect to reaction profiles and since, furthermore, these scales only consist of 4 items each, which reduces the internal consistencies (Table 2), the scales h+ and h++ will no longer be analyzed separately, but as a combined scale H.

4.1.3. CORRELATIONS BETWEEN AGGRESSIVE AND DEPRESSIVE RESPONSES (QUESTION 2.1.3.)

All intercorrelations among all of the 48 scales are listed in Tables 4, 5, 6, 7, 8 and 9 which provide the basis for answering question 2.1.3.. In order to focus on correlations between aggressive and depressive responses within each of the 4 major QDF categories, correlations between the depressive items 1 and 5 and between the aggressive items 3 and 6 respectively have been presented in blue, the ones between the two depressive and the two aggressive items which are of salient interest with respect to our question have been presened in red.

Regularly, the scales of reactions 1, 3, 5 and 6 show significant positive intercorrelations, demonstrating that persons who respond by aggressive reactions (3 and 6) also tend to react in a depressive way (responses 1 and 5). In some instances the coefficients depicted in red (representing depressive-aggressive relationships), are even higher than respective correlations between the two depressive or the two aggressive responses (blue coefficients). This even holds for correlations between corresponding reactions to withdrawal from positive reinforcers (pos) and encounter with negative reinforcers (neg within the same category of human (H) or nonhuman (NH) frustration. Similarly, reaction scales 2 and 4, the indifferent responses, are positively correlated with each other, but between the set of scales 1, 3, 5, 6, and the two scales 2 and 4, the

associations are negative or nonsignificant. This means that relaxed responses (4) and active coping (2) are negatively related or unrelated to the emotional depressive and aggressive reactions. This is observed across all categories of situations, as well as within categories.

A further striking observation is that the correlations between corresponding reactions i.e. between response 1-6 to the positive condition and to the negative condition (diagonal in Table 5 and right diagonal in Table 7) are the highest coefficients in the tables. The same holds for corresponding reactions to human and nonhuman frustrations (diagonal in Table 8, diagonal in Table 9). This means that response tendencies of persons are more dominant than influences of specific situations.

Table 4

Intercorrelations between the reactions to scales of withdrawal from positive reinforcers of the QDF (pos x pos).

	posNH1	posNH2	posNH3	posNH4	posNH5	posNH6	posh+1	posh+2	posh+3	posh+4	posh+5	posh+6	posh++1	posh++2	posh++3	posh++4	posh++5	posh++6
posNH1	**1**						.881**		.441**	−.321*	.301*	.453**	.791**		.430**	−.302*	.410**	.295*
posNH2		**1**						.724**		.566**				.679**		.429**		
posNH3	**.502****		**1**				.464**		.733**	−.254		.348*	.358*		.707**	−.310*	.294*	.363**
posNH4	−.**298***	**.430****	−.**349***	**1**			−.293*	.321*		.625**			−.239	.386**		.712**		
posNH5	**.392****		**.310***		**1**		.401**	−.274		−.271	.507**	.471**	.345*				.507**	
posNH6	**.580****		**.330***	−.**334***	**.466****	**1**	.512**	−.296*	.276	−.359*	.269	.665**	.422**	−.352*	.270	−.388**	.283*	.477**
posh+1	.881**		.464**	−.293*	.401**	.512**	**1**						.828**		.557**	−.336*	.445**	.299*
posh+2		.724**		.321*	−.274	−.296*		**1**						.743**		.405**		
posh+3	.441**		.733**			.276	**.594****		**1**				.366**		.812**	−.299*		.330*
posh+4	−.321*	.566**	−.254	.625**	−.271	−.359*	−.**372****	**.547****	−.**291***	**1**			−.315*	.541**	−.249	.648**		
posh+5	.301*				.507**	.269	**.417****	−.**301***	**.303***	−.**282***	**1**		.425**	−.337*	.254		.496**	
posh+6	.453**		.348*		.471**	.665**	**.518****	−.**323***	**.434****	−.**283***	**.438****	**1**	.487**	−.353*	.362**	−.249	.393**	.445**
posh++1	.791**		.358*	−.239	.345*	.422**	.828**		.366**	−.315*	.425**	.487**	**1**					
posh++2		.679**		.386**		−.352*		.743**		.541**	−.337*	−.353*		**1**				
posh++3	.430**		.707**			.27	.557**		.812**	−.249	.254	.362**	**.355***		**1**			
posh++4	−.302*	.429**	−.310*	.712**		−.388**	−.336*	.405**	−.299*	.648**		−.249		**.498****	−.**339***	**1**		
posh++5	.410**		.294*		.507**	.283*	.445**				.496**	.393**	**.448****			−.**319***	**1**	
posh++6	.295*		.363**			.477**	.299*		.330*			.445**	**.335***	−.**286***	**.425****	−.**257**		**1**

P < .1; *P < .05; **P < .01.

Table 5

Intercorrelations between the reactions to scales of withdrawal from positive and encounter with negative reinforcers of the QDF (neg x pos).

	posNH1	posNH2	posNH3	posNH4	posNH5	posNH6	posh+1	posh+2	posh+3	posh+4	posh+5	posh+6	posh++1	posh++2	posh++3	posh++4	posh++5	posh++6
negNH1	.878**		.484**	−.356*	.478**	.563**	.824**		.405**	−.327*	.253	.438**	.681**		.480**	−.384**	.408**	.262
negNH2		.832**		.321*				.778**		.506**	−.300*			.752**		.294*		
negNH3	.423**		.845**	−.300*	.281*	.263	.400**		.620**	−.264		.242	.285*		.639**	−.311*	.252	
negNH4		.350*		.629**				.308*		.549**				.250		.555**		
negNH5	.340*				.744**	.411**	.313*			−.265	.438**	.260				−.346*	.511**	
negNH6	.469**			−.240	.472**	.751**	.423**				.266	.604**	.421**				.382**	.311*
negh+1	.818**		.380**	−.261	3475**	.511**	.871**		.411**	−.343*	.382**	.502**	.837**		.372**	−.279*	.460**	.269
negh+2		.838**		.455**				.751**		.613**	−.286*			.748**		.476**		−.237
negh+3	.392**		.855**		.246	.246	.463**		.743**			.342*	.354*		.673**		.239	.346*
negh+4		.319*	−.375**	.639**	−.271	−.269	−.282*	.313*	−.278	.642**		−.264	−.310*	.260	−.302*	.488**		
negh+5	.401**		.282*		.564**	.310*	.410**		.284*		.411**	.333*	.349*				.635**	
negh+6					.275	.603**						.510**				−.299*	.324*	.464**
negh++1	.724**		.338*		.337*	.471**	.760**		.394**	−.347*	.358*	.398**	.784**		.27		.335*	.259
negh++2		.867**		.354*				.718**		.519**				.728**		.433**		
negh++3	.349*		.723**			.275	.394**		.639**			.275			.746**			.336*
negh++4		.256		.561**						.336*				.254		.407**		
negh++5	.267		.251		.562**	.268	.310*		.247	−.257	.448**	.378**	.324*		.257	−.285*	.552**	
negh++6	.276					.456**					−.243	.288*						.477**

P < .1; *P < .05; **P < .01.

Table 6

Intercorrelations between the reactions to scales of withdrawal from positive and encounter with negative reinforcers of the QDF (neg x neg).

	negNH1	negNH2	negNH3	negNH4	negNH5	negNH6	negh+1	negh+2	negh+3	negh+4	negh+5	negh+6	negh++1	negh++2	negh++3	negh++4	negh++5	negh++6
negNH1	**1**						.840**		.396**	−.246	.455**		.636**		.411**		.353*	
negNH2		**1**						.850**						.826**				
negNH3	**.484****		**1**				.380**		.748**	−.413**	.265		.349*		.685**		.271	.245
negNH4	**−.278**	**.264**		**1**			−.283*	.394**		.587**	−.266			.290*		.390**		
negNH5	**.472****			**−.277**	**1**		.314*				.645**		.271				.627**	
negNH6	**.477****				**.337***	**1**	.472**			−.255	.261	.431**	.424**				.273	.314*
negh+1	.840**		.380**	−.283*	.314*	.472**	**1**						.826**		.267		.348*	
negh+2		.850**		.394**				**1**						.829**		.238		
negh+3	.396**		.748**				**.428****		**1**				.389**		.626**			
negh+4	−.246		−.413**	.587**		−.255	**−.345***	**.399****	**−.335***	**1**						.388**		
negh+5	.455**		0.265	−.266	.645**	.261	**.472****		**.301***		**1**		.383**				.688**	
negh+6						.431**					**.276**	**1**	.253				.259	.661**
negh++1	.636**		.349*		.271	.424**	.826**		.389**		.383**	.253	**1**					
negh++2		.826**		.290*				.829**						**1**				
negh++3	.411**		.685**				.267		.626**						**1**			
negh++4				.390**				.238		.388**				**.269**		**1**		
negh++5	.353*		.271		.627**	.273	.348*				.688**	.259	**.336***				**1**	
negh++6			.245			.314*						.661**			**.345***	**−.254**		**1**

P < .1; *P < .05; **P < .01.

Table 7

Intercorrelations between the reactions to scales of withdrawal from positive and encounter with negative reinforcers of the QDF produced by humans (pos H x pos H and pos H x neg H).

	posH1	posH2	posH3	posH4	posH5	posH6	negH1	negH2	negH3	negH4	negH5	negH6
posH1	**1**						.892**		.426**		.393**	
posH2		**1**						.823**		.328*		
posH3	**.529****		**1**				.401**		.815**		.285*	
posH4	**−.363****	**.585****	**−.342***	**1**			−.329*	.581**		.626**	−.297*	−.248
posH5	**.524****		**.302***	**−.297***	**1**		.468**				.654**	
posH6	**.499****	**−.343***	**.478****	**−.296***	**.309***	**1**	.438**		.424**		.281*	.569**
negH1							**1**					
negH2								**1**				
negH3							**.362****		**1**			
negH4								**.340***		**1**		
negH5							**.435****				**1**	
negH6							**.257**		**.279***		**.255**	**1**

P < .1; *P < .05; **P < .01.

Table 8

Intercorrelations between the reactions to human sources of frustration with reactions to nonhuman frustrations by withdrawal from positive reinforcers of the QDF (pos H and neg H x pos NH).

	posNH1	posNH2	posNH3	posNH4	posNH5	posNH6	posh+1	posh+2	posh+3	posh+4	posh+5	posh+6	posh++1	posh++2	posh++3	posh++4	posh++5	posh++6
posH1	.880**		.436**	−.282*	.393**	.494**	.966**		.516**	−.363**	.440**	.527**	.945**		.489**	−.299*	.466**	.329*
posH2		.752**		.379**		−.348*		.932**		.583**	−.342*	−.362**		.935**		.484**		
posH3	.457**		.757**			.287*	.605**		.957**	−.285*	.294*	.420**	.379**		.947**	−.334*	.238	.394**
posH4	−.343*	.545**	−.311*	.738**	−.278	−.412**	−.389**	.521**	−.325*	.900**		−.292*	−.294*	.571**	−.326*	.915**	−.307*	
posH5	.419**		.244		.584**	.319*	.499**		.294*	−.294*	.820**	.476**	.505**	−.240	.280*	−.247	.903**	
posH6	.437**		.419**		.335*	.667**	.476**	−.265	.447**	−.237	.255	.839**	.480**	−.375**	.464**	−.298*	.278	.861**
negH1	.810**		.377**		.429**	.515**	.857**		.421**	−.361*	.388**	.475**	.850**		.339*	−.241	.420**	.276
negH2		.893**		.418**				.766**		.587**	−.255			.771**		.473**		
negH3	.410**		.873**			.290*	.474**		.765**			.341*	.324*		.788**			.378**
negH4		.347*		.723**				.305*		.599**				.308*		.540**		
negH5	.356*		.288*		.612**	.312*	.386**		.287*	−.261	.469**	.389**	.364**		.254	−.277	.641**	
negH6	.269					.589**						.451**				−.289*	.292*	.515**

P < .1; *P < .05; **P < .01.

Table 9

Intercorrelations between the reactions to human sources of frustration with reactions to nonhuman frustrations by encounter with negative reinforcers (pos H and neg H x neg NH).

	negNH1	negNH2	negNH3	negNH4	negNH5	negNH6	negh+1	negh+2	negh+3	negh+4	negh+5	negh+6	negh++1	negh++2	negh++3	negh++4	negh++5	negh++6
posH1	.795**		.365**		.262	.441**	.895**		.433**	−.308*	.400**		.805**		.338*		.330*	
posH2		.820**		.299*				.803**		.306*				.775**		.236		
posH3	.463**		.661**				.412**		.746**	−.304*	.258		.352*		.725**		.265	
posH4	−.393**	.436**	−.317*	.608**	−.338*	−.241	−.341*	.597**		.619**	−.241	−.280*	−.283*	.522**		.411**	−.299*	
posH5	.393**				.553**	.383**	.492**	−.251			.621**	.305*	.398**				.585**	
posH6	.408**		.265			.532**	.449**	−.248	.405**			.572**	.384**		.360*		.281*	.453**
negH1	.779**		.382**	−.24	.307*	.470**	.961**		.428**	−.305*	.450**	.253	.950**				.358*	
negH2		.875**		.352*				.947**		.298*				.964**		.267		
negH3	.448**		.794**				.383**		.895**	−.298*		.239	.304*		.907**			.276
negH4		.246	−.256	.594**				.389**		.858**				.273	−.251	.806**		−.246
negH5	.434**		.292*		.691**	.291*	.439**		.282*		.901**	.290*	.388**				.935**	
negH6			.250			.415**	.248				.260	.931**	.242		.305*			.889**

P < .1; *P < .05; **P < .01.

4.2. Responses to Frustration and Personality Traits (Study 2)

4.2.1. Correlations between Trait and State Variables of Depression and Aggression (Questions 2.2.)

For answering questions 2.2.1., 2.2.2. and 2.2.3., Figures 4 and 5 depict the correlations of the QDF scales with the personality factors Depression and Aggression mentioned above for nonhuman sources of frustration (Figure 4) and for human sources of frustration (Figure 5), each depicted for all 6 response scales to withdrawal from positive reinforcers (pos, (a)) and application of negative reinforcers (neg, (b)).

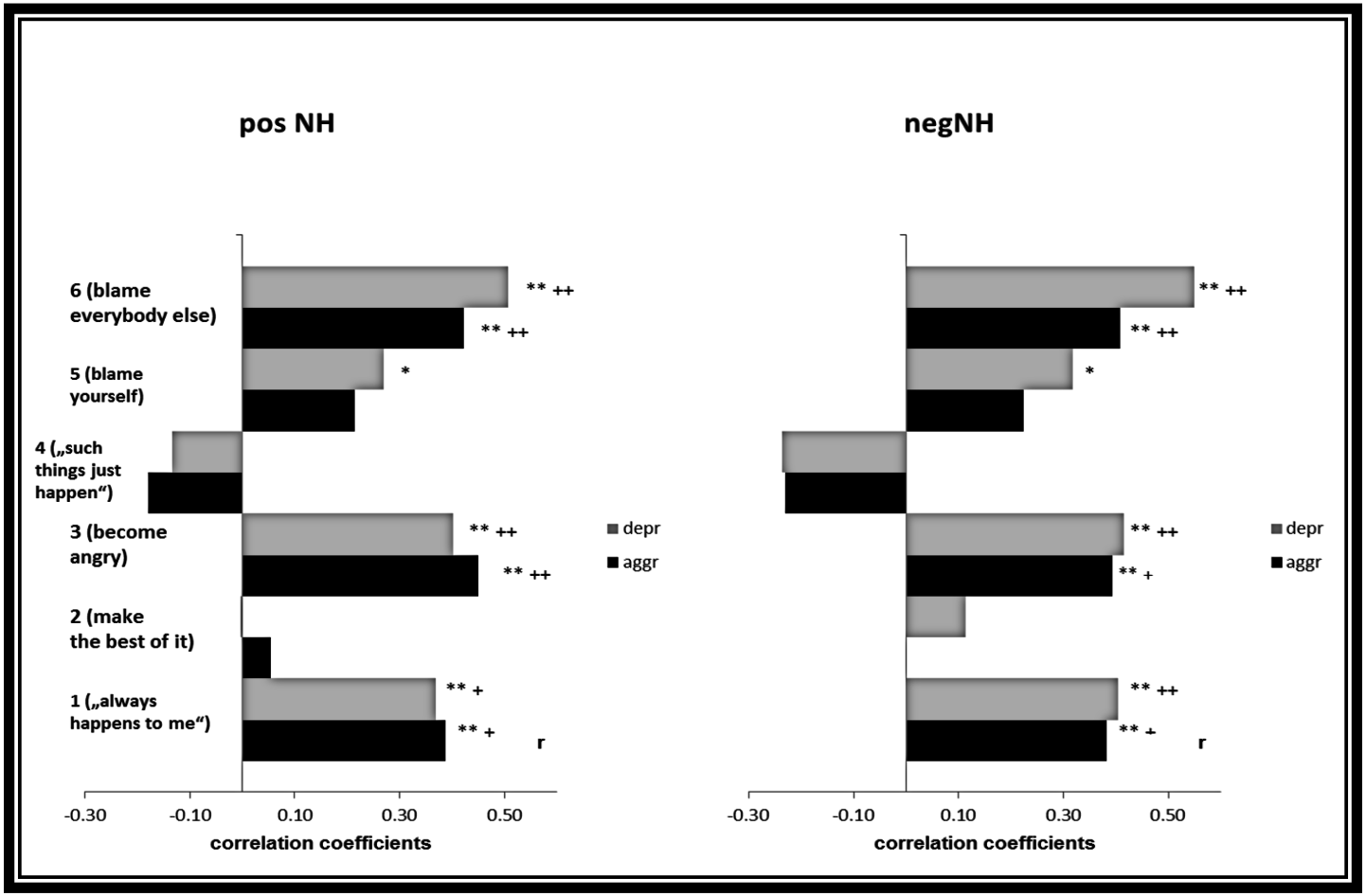

Figure 4 Correlations of factors Depression and Aggression with QDF scales for nonhuman conditions; withdrawal of positive reinforcers: posNH, (a); encounter with negative reinforcers: negNH, (b) (*P < .05; **P < .01; $^{+}$P < .05; $^{++}$P < .01 after Bonferroni correction).

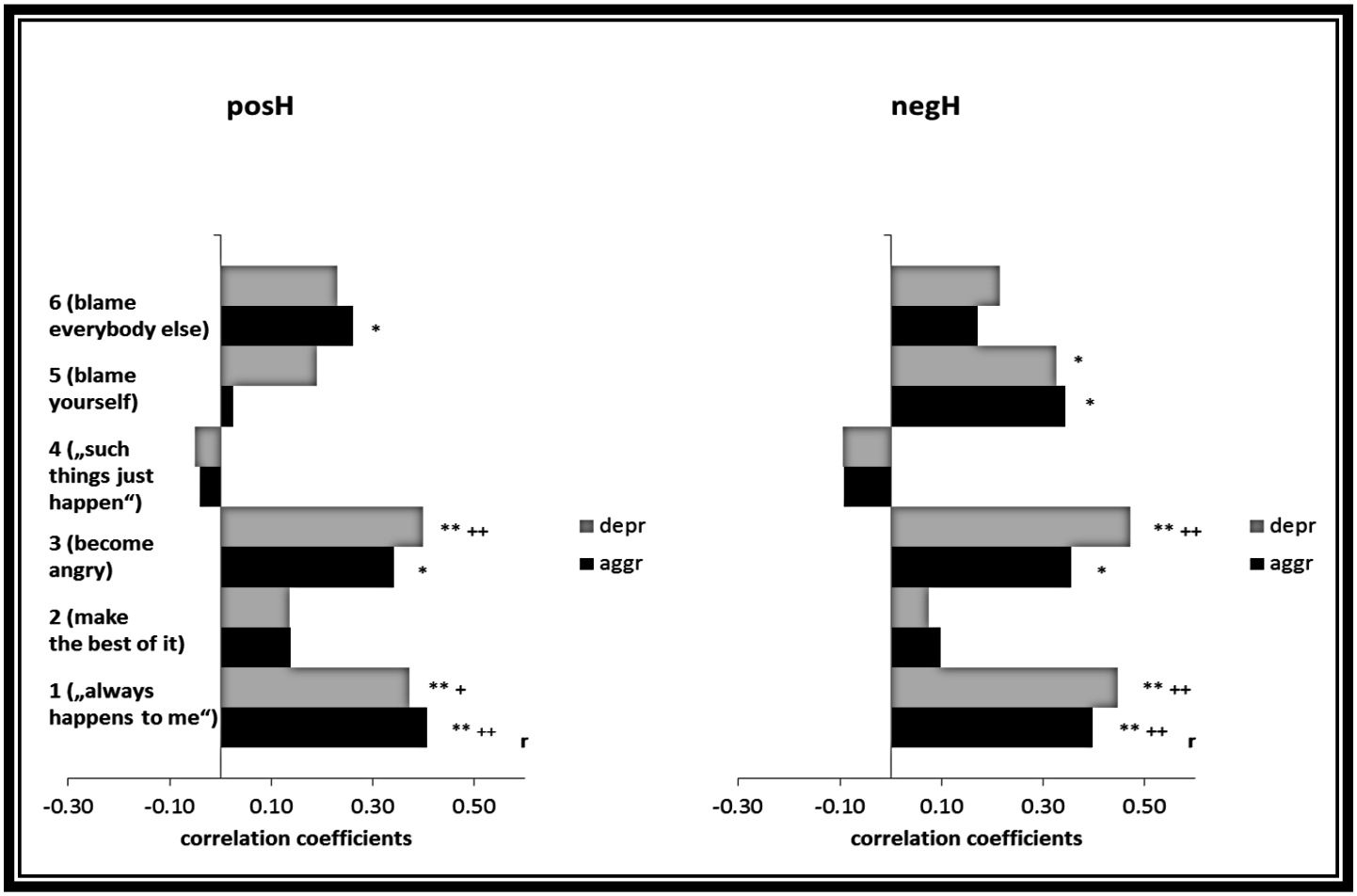

Figure 5 Correlations of factors Depression and Aggression with QDF scales for human conditions; withdrawal from positive reinforcers: posH, (a); encounter with negative reinforcers: negH, (b) (*P < .05; **P < .01; $^{+}$P < .05; $^{++}$P < .01 after Bonferroni correction).

Significant correlations between responses, in particular responses 1 (happens only to me) and 3 (get angry) with both, Depression and Aggression, can be found within all four conditions (Figures 4 and 5 left and right panel). The hypothesis would suggest that Depression should show higher correlations with the depressive responses 1 and 5 than Aggression, and Aggression should be more intensively related to responses 3 and 6 than Depression. Regarding the significant correlation coefficients, this is neither the case for the negative reinforcement condition nor for the condition of withdrawal from rewards in either human (H, Figure 4) or nonhuman (NH, Figure 5) sources of frustration. Even in the few instances in which pairs of correlations according to inspection would support the hypothesis (Figure 4 response 3, pos NH, and response 5 both, pos and neg NH), no significant differences between the Aggression and Depression coefficients can be proven by z-tests. Also on a descriptive level from the 6 significant correlation coefficients between depressive responses 1 or 5 and Depression, three showed higher correlations with Depression and three with Aggression. Even more surprising was that out of the 6 significant correlations of the aggressive responses 3 and 6 with the personality factors, five showed higher correlations with Depression than with Aggression indicating that Depression seems to be more responsible for both types of responses to frustration than Aggression, and that aggressives do not seem to be more inclined to respond by aggressive reactions than depressives. It seems that neither depressive nor aggressive types prefer their trait congruent reactions. So, the hypothesis of specific trait-state relationships has to be rejected.

4.2.2. The Relations between Punishment and Depression versus Nonreward and Aggression (Question 2.2.2.)

For testing the hypothesis derived from Gray's theory that depressives are more sensitive to punishment than to withdrawal of reward corresponding correlations of Depression and Aggression, respectively, with the QDF response items of the left (pos) and right panel (neg) of each figure compared by z-tests. Although no significant differences between corresponding Items of the left and right panel could be detected, on a descriptive level correlations with Depression with each of the relevant responses 1, 3, 5, 6 were higher for responses to negative reinforcers than for denial of positive

events, particularly in the nonhuman conditions of frustration (Figure 4), so that this part of the hypothesis gets some support. For Aggression, no clear pattern emerged since only half of the correlations with the responses were higher for denial of positive reinforcers than for encounter with negative events. Surprisingly, aggressives even tended to accuse themselves (reaction 5) and not the other person (reaction 6) when being insulted or attacked by other persons (Figure 5(b), negH). Taken together, the situation by personality interaction expected for the two stimulus conditions according to question 2 could not be found in our data.

4.2.3. Differences in Correlations between Frustrations Caused by Human and NonHuman Conditions (Question 2.2.3.)

It was hypothesized that depressives as opposed to aggressives might be more sensitive to frustrations caused by humans than to frustrations by external inanimate obstacles. Although this seems to apply to getting angry (reaction 3) which was higher with Depression in frustrations caused by humans than in the nonhuman conditions, statistical comparisons between correlations of Depression with corresponding responses to person induced as opposed to inanimate frustrations, did not yield significant differences by z-tests. Rather, it becomes evident that in particular reaction 6 (blaming others) is less associated with both personality factors Depression and Aggression when elicited by frustrations caused by humans (Figure 4) than by inanimate frustrations (Figure 5). So, there is no convincing evidence for a specific affinity of depressives to frustrations by humans.

Since the traits of Aggression and Depression are positively correlated with each other ($r = .374$), partial correlations with Depression were computed controlling for Aggression and partial correlations with Aggression partialling out Depression (see Table 10).

Table 10

Partial correlations of reactions in QDF scales with the personality factors of Aggression and Depression, controlling for Depression and Aggression, respectively, (legend see Table 1).

QDF reactions	Aggression (contr. for Depression)		Depression (contr. for Aggression)	
	posNH	negNH	posNH	negNH
1 (“always happens to me”)	.29*	.27*	.26*	.30*
2 (make the best of it)	.06	−.05	−.02	.12
3 (become angry)	.35**	.28*	.28*	.32*
4 (“such things just happen”)	−.14	−.16	−.07	−.17
5 (blame yourself)	.13	.12	.21	.26*
6 (blame everybody else)	.29*	.26*	.42**	.47**
	posH	negH	posH	negH
1 (“always happens to me”)	.31*	.28*	.26*	.35**
2 (make the best of it)	.09	.08	.09	.04
3 (become angry)	.23	.22	.31*	.39**
4 (“such things just happen”)	−.02	−.06	−.04	−.07
5 (blame yourself)	−.05	.25	.19	.23
6 (blame everybody else)	.19	.10	.15	.17

P < .1; *P < .05; **P < .01.

All correlations were lower than the original ones, but mostly still significant, although partly only on the .05 level. This demonstrates that in spite of some common variance each of the two constructs contributes special variance to the response variables which were significantly related to the traits.

In summary, in reply to question 2.2.1. partial correlations between depressive responses 1 and 5 and aggressive responses 3 and 6 on the one hand and the corresponding personality factors on the other were compared across all stimulus conditions on a descriptive level. No clear relationship between corresponding trait and state variables could be observed, since from the eight correlation coefficients between depressive responses 1 or 5 and Depression, three showed higher correlations with Depression and three with Aggression (two were not significant). Even more surprising was that out of the 6 significant correlations of the aggressive responses 3 and 6 with the personality factors, five showed higher correlations with Depression than with Aggression indicating that Depression seems to be more responsible for both types of responses to frustration than Aggression, and that aggressives do not seem to be more inclined to respond by aggressive reactions than depressives. This confirms the high correlation between aggressive and depressive reactions across all conditions observed in study 1.

In response to question 2.2.2., the hypothesis derived from Gray's theory (Gray, 1981) that depressives are more sensitive to punishment than to withdrawal of reward can partly be confirmed, since for each of the relevant responses 1, 3, 5, 6 corresponding correlations with Depression were higher for responses to negative reinforcers than for denial of positive events, particularly in the nonhuman conditions of frustration (Figure 4), so that this part of the hypothesis can be confirmed although none of the differences reach significance. For Aggression no clear pattern emerged, since only half of the correlations with the responses were higher for denial of positive reinforcers than for encounter with negative events. Surprisingly, aggressives even tended to accuse themselves (reaction 5) and not the other person (reaction 6) when being insulted or attacked (Figure 5(b), negH). Taken together, the situation by personality interaction expected for the two stimulus conditions according to question 2 could not be found in our data.

Finally, with respect to question 2.2.3., patterns of correlations between the personality factors and responses to corresponding human and nonhuman conditions of frustrations were compared (Figure 4 versus Figure 5). The patterns for correlations with

Depression and Aggression were fairly similar: for reaction 6 (blame others), the correlations were always higher in conditions of nonhuman as compared to human sources of frustration, the "negative" conditions yielding clearly higher differences between coefficients than the "positive" frustrations. Conversely, reaction 1 (only happens to me) always yielded higher correlations with both personality factors in human than in nonhuman conditions. For the condition of blaming oneself (reaction 5) correlations with both Depression and Aggression were higher in nonhuman conditions than in those caused by humans in the situations of deprivation from reward, but vice versa when confronted with negative reinforcement. The only clearly specific response suitable to distinguish between the depressive and aggressive personality factor was getting angry (reaction 3) which was more significantly correlated with Aggression as a response to inanimate obstacles both when deprived from reward and when confronted with negative events, and was higher with Depression in all frustrations caused by humans than in the nonhuman conditions. So, only this latter result might be a weak hint that depressives tend to be more frustrated by social interactions than by external mischief and that an opposite reaction is characteristic for aggressives.

4.3. Responses to Frustration, Personality Traits and History of Alcohol Dependence (Study 2)

4.3.1. History of Alcohol Dependence as Related to Personality Traits (Question 2.3.1.)

Table 11 presents the descriptive means and standard deviations of age, factors of alcoholism, ACQ scores and personality factors as well as the distribution of the number of detoxifications.

Table 11

Descriptive means and standard deviations of age, alcoholism factors and personality factors, distribution of no. of detoxifications.

Variable/Scale		Mean	SD	Range
Age		47,93	9,00	27-69
Age of onset		31,53	12,41	14-58
Amount of beer (score)		2,83	1,36	
Amount of spirits (score)		2,33	1,45	
No. of cigarettes/day		3,77	2,60	
ACQ		141,81	49,07	
Impulsivity (I 7)		7,57	3,99	
Cognitive Impulsivity (BIS 11)		15,65	3,6	
Motor Impulsivity (BIS 11)		21,75	4,50	
Experience Seeking		4,87	1,88	
Disinhibition (SSS)		3,70	2,37	
Spontaneous Aggression (FAF)		2,28	2,42	
Reactive Aggression (FAF)		3,75	2,46	
Fear of injury (IAF)		139,27	19,28	
Social fear (IAF)		82,73	22,36	
Punishment (SPSRQ)		35,38	8,87	
Depression (ADS)		14,88	9,37	
Auto Aggression (FAF)		5,20	2,74	
		n		
No. of detoxifications	0	12		
	1-2	29		
	3-4	6		
	>4	13		

Since correlations of drinking factors F1-duration of alcohol dependence and F2-alcohol consumption/intake did not reveal significant correlations with either personality factors or any single response scale of the QDF or the ACQ (all p values > .10) they are no longer considered with regard to our questions. The correlations of the remaining two indicators of alcohol history, F3-number of detoxifications reflecting liability to relapse and the ACQ score reflecting severity of alcohol craving with the other variables are listed in Table 12. Number of detoxifications has been corrected by partialling out the years of alcohol dependence.

Table 12

Correlations of number of detoxifications and ACQ scores with factors of drinking habits, personality factors and QDF scales (correlations with no. of detox corrected for years of dependence).

	F3: no. of detox	ACQ
F3: no. of detox	1,000	0,388**
ACQ	0,388**	1,000
F1: duration of alcohol dependence	0,106	0,025
F2: consumption/intake of alcohol	0,145	0,022
Impulsivity	0,231	0,345**$^{(+)}$
Aggression	0,390**$^{(++)}$	0,206
Anxiety	0,242	0,125
Depression	0,310*	0,353**$^{(+)}$
posNH1	0,367**	0,175
posNH3	0,288*	0,235
posNH5	0,340**	0,145
posNH6	0,281*	0,343**
posH1	0,517**$^{(++)}$	0,245
posH3	0,356**	0,160
posH5	0,321*	0,224
posH6	0,096	0,188
negNH1	0,362**	0,142
negNH3	0,302*	0,213
negNH5	0,035	-0,034
negNH6	0,282*	0,324*
negH1	0,406**$^{(+)}$	0,193
negH3	0,219	0,240
negH5	0,269*	0,282*
negH6	0,101	0,275*

*P < .05; **P < .01; $^{(+)}$ P < .05; $^{(++)}$ P < .01 after Bonferroni correction

As can be seen, neither factor F3-number of detoxifications nor the ACQ score are correlated to F1-duration of alcohol dependence or F2-alcohol consumption/intake, but they show a slight mutual positive correlation of r = .38. Furthermore, factor F3-number of detoxifications exhibits a highly significant correlation with the personality factor Aggression and a significant one with Depression which, however, is no longer significant after Bonferroni correction based on dividing the significance level by 4. The ACQ score is rather significantly related to impulsivity and Depression which is still valid after adjustment of significance levels. So the two alcohol variables share their relationship to Depression but differ with respect to Aggression and impulsivity.

4.3.2. Alcohol History as Related to the Frustration Scales (Question 2.3.2.)

Correlations between the factor number of detoxifications and the conditions of nonreward and punishment of the Questionnaire on Daily Frustrations QDF are also presented in Table 12.

It is obvious that the correlation of the depressive reaction 1 (happens only to me) with number of detoxifications is the dominant one in each of the four scales. It is accompanied by the correlations of self accusation (response 5) and by becoming angry (response 3) in three scales each. Accusing others (response 6) seems only relevant in conditions of nonhuman frustration. But the only association surviving Bonferroni correction after dividing the p values by 16 is the depressive response 1 in both conditions of frustration caused by humans.

Correlations between the frustration scales and the ACQ score yield highest coefficients with the aggressive response 6 (blaming others) in three of the frustration conditions. In one scale also blaming oneself (reaction 5) is slightly correlated with the ACQ score. But none of these correlations with the ACQ score remains significant after adjustment of the p levels.

Considering the answer to question 2.3.2., it may be criticized that the results are likely to be biased or mediated by the personality factors that had been found to be related to the two variables of alcoholism, number of detoxifications and the ACQ score, respectively. Therefore, partial correlations were computed by controlling for the personality traits of Aggression, impulsivity and Depression. In a first step the three personality factors were considered separately as possible confounders. In a second step

the three variables were partialled out simultaneously. The results are depicted in Table 13 which shows the respective patterns of correlation coefficients between number of detoxifications as well as the ACQ score and respective QDF scales when controlling for the personality factors.

Table 13

Correlations of no. of detox and ACQ scores with the QDF scales, controlling for Aggression, impulsivity and Depression, respectively.

QDF scales	controlling for Aggression		controlling for impulsivity		controlling for Depression		controlling for Aggr., imp., Depr.	
	no. of detox	ACQ	no. of detox	ACQ	no. of detox	ACQ	no. of detox	ACQ
posNH1	0,253	0,106	0,312*	0,057	0,284*	0,051	0,204	-0,030
posNH3	0,138	0,163	0,236	0,147	0,190	0,109	0,085	0,060
posNH5	0,287*	0,106	0,302*	0,069	0,282*	0,056	0,253	0,009
posNH6	0,141	0,289*	0,220	0,253	0,152	0,203	0,059	0,150
posH1	0,425**$^{(+)}$	0,180	0,480**$^{(++)}$	0,150	0,454**$^{(++)}$	0,131	0,391**	0,073
posH3	0,259	0,097	0,315*	0,076	0,269*	0,022	0,209	-0,026
posH5	0,338*	0,224	0,305*	0,199	0,280*	0,171	0,308*	0,160
posH6	-0,006	0,142	0,015	0,073	0,027	0,117	-0,053	0,035
negNH1	0,246	0,070	0,302*	0,008	0,269*	0,000	0,190	-0,095
negNH3	0,178	0,147	0,248	0,113	0,203	0,078	0,119	0,015
negNH5	-0,056	-0,083	0,018	-0,066	-0,069	-0,164	-0,109	-0,168
negNH6	0,147	0,269*	0,193	0,175	0,142	0,167	0,045	0,043
negH1	0,297*	0,124	0,355**	0,074	0,314*	0,042	0,242	-0,039
negH3	0,096	0,183	0,156	0,140	0,089	0,089	0,013	0,026
negH5	0,154	0,230	0,208	0,188	0,184	0,188	0,104	0,128
negH6	0,038	0,249	0,073	0,247	0,037	0,218	0,003	0,207

*P < .05; **P < .01; $^{(+)}$ P < .05; $^{(++)}$ P < .01 after Bonferroni correction

When controlling for Aggression correlations with number of detoxifications remained significant for the depressive response 5 (blame myself) in both conditions of withdrawal of positive reinforcers and with response 1 (happens only to me) in both human conditions. The patterns when partialling out impulsivity and Depression were exactly identical and left more significant correlations than when controlling for Aggression. Correlations with depressive responses 1 and 5 to nonhuman withdrawal of positive reinforcers and all the correlations with responses 1, 3 and 5 to respective human conditions remained significant, whereas correlations with responses to encounter with both negative conditions were reduced to the depressive reaction 1. When controlling for all personality traits simultaneously, only responses 1 and 5 to conditions of frustration caused by humans remained significant, but no longer after Bonferroni correction. In contrast, correlations with the ACQ score which had only shown significance for the aggressive reaction 6 (blaming others) remained significant in nonhuman conditions when controlling for Aggression and disappeared when controlling for impulsivity, Depression or all personality variables simultaneously. These findings indicate that number of detoxifications has some genuine relationships with specific responses to frustrations by humans which can not be attributed to the personality trait of Aggression which had shown to be most prominently associated with liability to relapse represented by number of detoxifications, whereas the associations between severity of alcohol craving and angry reactions to frustrations may be predicted on the basis of impulsivity and Depression.

4.4. MAO B Activity and Genetics as Related to Personality traits and Responses to Frustration (Study 2)

As outlined in sections 1.4.2. and 1.5.3. a number of personality traits had been identified as correlates of MAO B activity (section 1.4.2.) and the COMT polymorphism (section 1.5.3.). On the basis of these traits listed in the literature dependent variables were selected for the analyses of relationships with the biological variables as listed under 3.6.2.4..

Table 14 shows the descriptive statistics of covariates and questionnaire scores.

Table 14

Descriptive means and standard deviations of age, number of cigarettes /day and questionnaire scores.

Variable/Scale	Mean	SD	Range
Age	47,93	9,00	27-69
No. of cigarettes/day	3,77	2,60	
Platelet MAO activity[1]	7,49	3,72	
Reaction time Go/NoGo[2]	433,46	72,85	
Cognitive Impulsivity (BIS 11)	15,65	3,6	
Motor Impulsivity (BIS 11)	21,75	4,50	
Experience Seeking	4,87	1,88	
Spontaneous Aggression (FAF)	2,28	2,42	
Reactive Aggression (FAF)	3,75	2,46	
Depression (ADS)	14,88	9,37	

[1](nmol of substrate oxidized per 10^{10} platelets/min) ; [2](ms)

The distribution of A and G allele carriers of the MAO B intron 13 polymorphism on the X chromosome in our male sample of n = 60 is A = 34; G = 26 which is likely to correspond to the disrtribution in the normal population according to Corona et al., 1996; Pivaca et al., 2007.

4.4.1. RELATIONSHIP BETWEEN MAO B ACTIVITY AND MAO B POLYMORPHISM (QUESTION 2.4.1.)

Figure 6 depicts that there is no significant association between MAO B intron 13 polymorphism and platelet MAO activity. This is concordant with the findings of Pivac et al. (2006) and Filic et al. (2005) who also stated that platelet MAO activity did not differ between carriers of the A allele and those of the G allele.

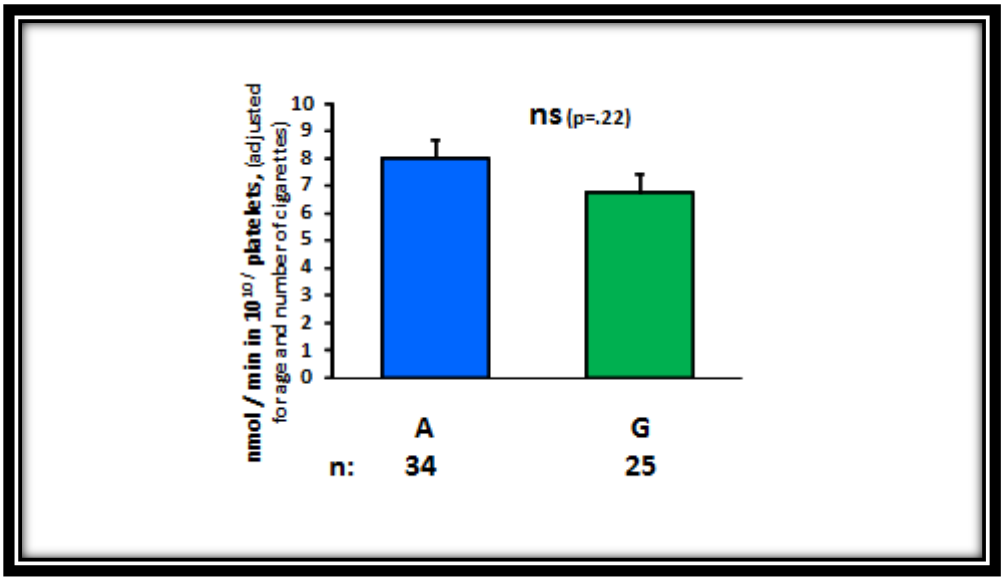

Figure 6 MAO B activity according to alleles A and G of the MAO B gene intron 13 polymorphism (number of cigarettes and age used as covariates). (One blood sample for MAO B determination got lost).

4.4.2. RELATIONSHIP BETWEEN PLATELET MAO ACTIVITY, MAO B POLYMORPHISM AND REACTION TIME AS AN INDICATOR OF IMPULSIVITY

There was no association between the typical indicator of impulsivity commission errors in the Go/NoGo condition and either different genotypes or different groups of MAO B activity among the alcohol dependent patients.

However, the genotype did seem to be related to reaction time. Figure 7 shows the associations of reaction times in the Go/NoGo task between A and G allele carriers as well as between groups of different platelet MAO activity. Alcohol dependent men who carry the G allele revealed significantly lower reaction times compared to those with the A genotype.

Patients with low, medium or high enzyme activity, however, did not differ significantly in reaction time (Figure 7).

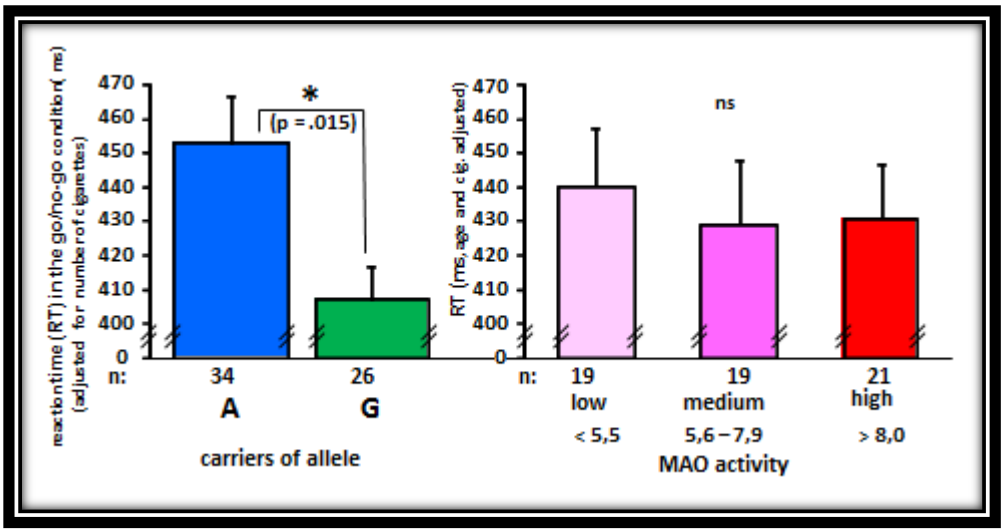

Figure 7 Means of reaction times in the Go/NoGo condition in carriers of the A und G allele of the MAO B rs 1799836 intron 13 polymorphism (left panel; number of cigarettes used as covariate) and means of reaction times in the Go/NoGo condition in persons with low, medium and high MAO activity (right panel; age and number of cigarettes used as covariates).

When testing for interactions between MAO B activity and the polymorphism of the MAO B gene, it can be seen in Figure 8 that there are significantly lower reaction times in the Go/NoGo condition of G allele carriers within each group of platelet MAO activity, although within the medium group there is no significant difference but also a lower reaction time in G allele carriers.

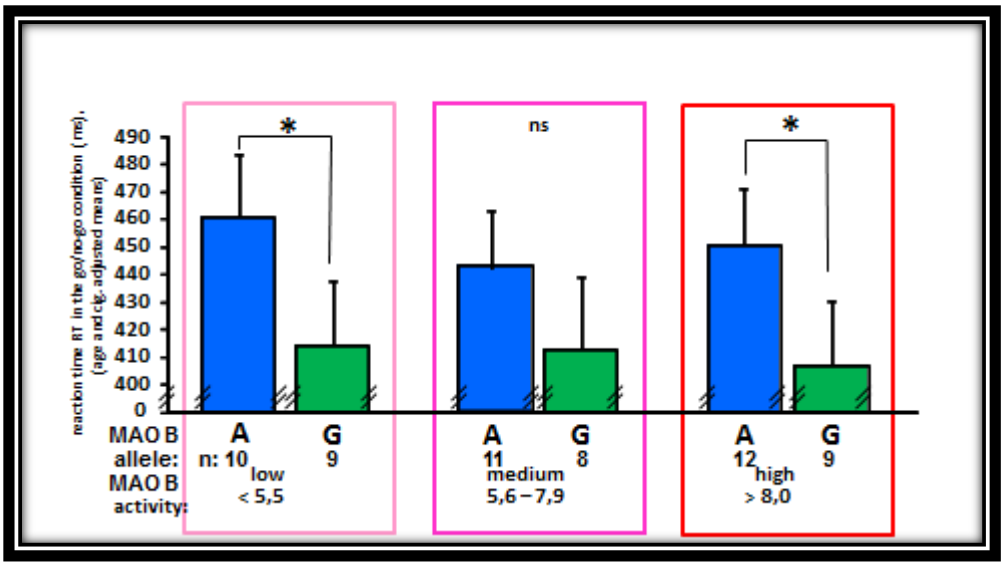

Figure 8 Means of reaction times in the Go/NoGo condition according to genotype and classification of MAO B activity (age and number of cigarettes used as covariates), effect of MAO B polymorphism: p = .036, MAO B activity and interaction: n.s..

Figure 9 depicts the same results by comparing the three groups of MAO B activity within the two groups of A and G allele carriers. This confirms that there is no significant difference in reaction times due to MAO B activity in either of the genetic groups, i.e. no significant interaction between the functional and the genetic properties of MAO B. So it can be concluded that reaction time is only significantly influenced by the genotype, but not by the activity of the enzyme.

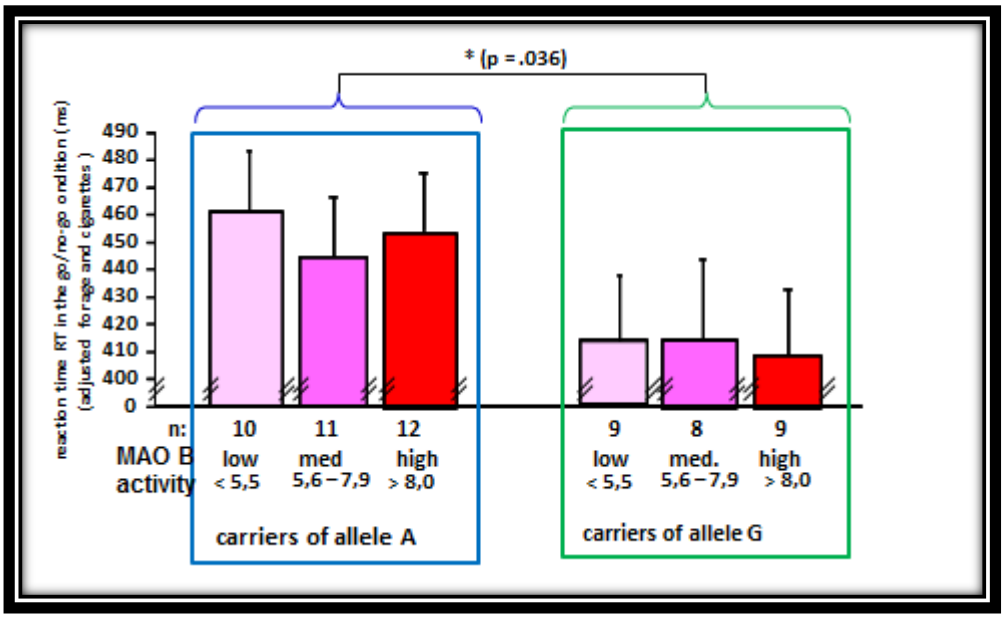

Figure 9 Means of reaction times in the Go/NoGo condition according to classification of MAO B activity and genotype (age and number of cigarettes used as covariates).

4.4.3. Relationship between Platelet MAO Activity, MAO B Polymorphism and Self Ratings on Impulsivity

Figures 10-12 depict the main effects of MAO B activity (Figure 10) and its interaction with the alleles of the MAO B gene for motor and cognitive impulsity measured by the questionnaire BIS 11 (Figures 11 and 12). Figure 10 reveals that motor impulsivity is significantly higher in the class of high MAO B activity compared to classes medium and low, and that this relation is similar but less pronpounced for cognitive impulsivity. Furthermore, Figure 11 shows that although there is no significant effect of the gene and no significant interaction between MAO B activity and the polymorphism motor impulsivity seems to be highest in carriers of the G allele with high MAO B activity which differs significantly from the respective group in A allele carriers.

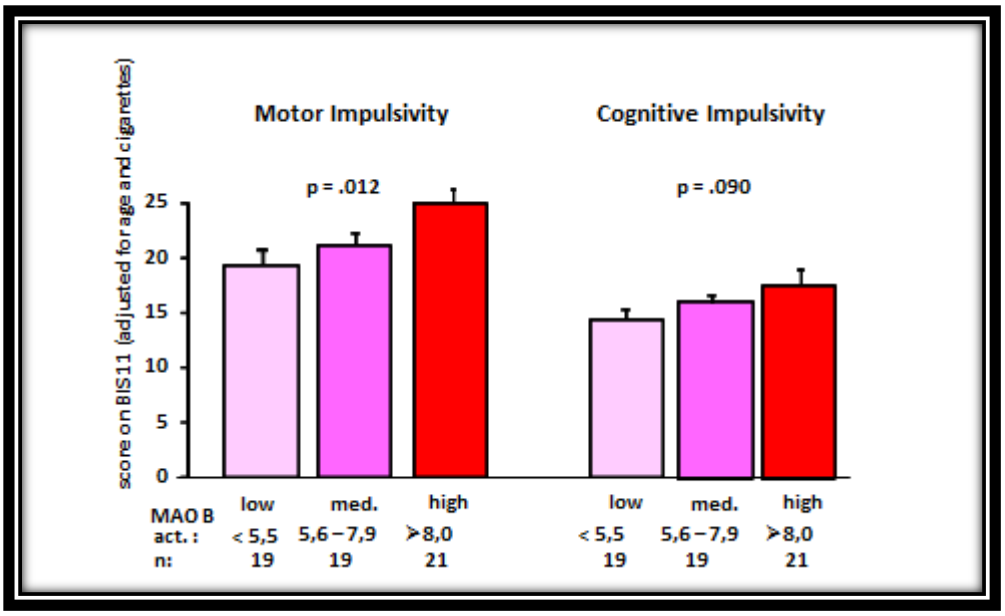

Figure 10 Personality differences in impulsivity according to classes of MAO B activity (age and number of cigarettes used as covariates).

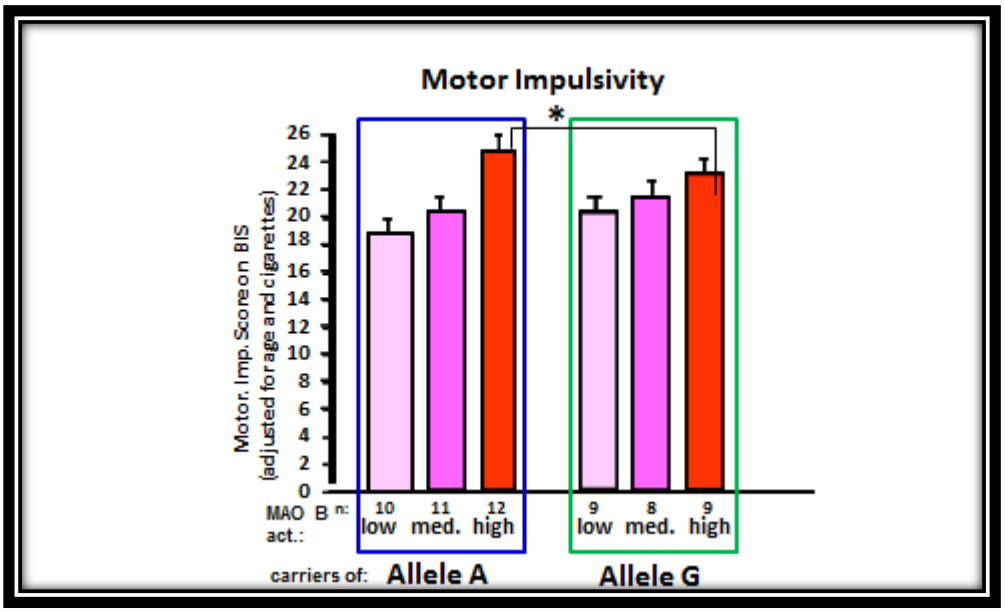

Figure 11 Interaction of MAO B polymorphism with MAO B activity for motor impulsivity (age and number of cigarettes used as covariates), effect of MAO B activity : p = .017, effect of MAO B polym and interaction: n.s..

Cognitive impulsivity measured by the BIS 11 which had been shown to be only slightly higher in patients with high MAO B activity (Figure 10) does however seem to be influenced by an interaction between MAO B activity and the polymorphism as shown in Figure 12. High cognitive impulsivity associated with high MAO B activity is found to be significantly higher in carriers of the A allele than in G allele carriers (Figure 12).

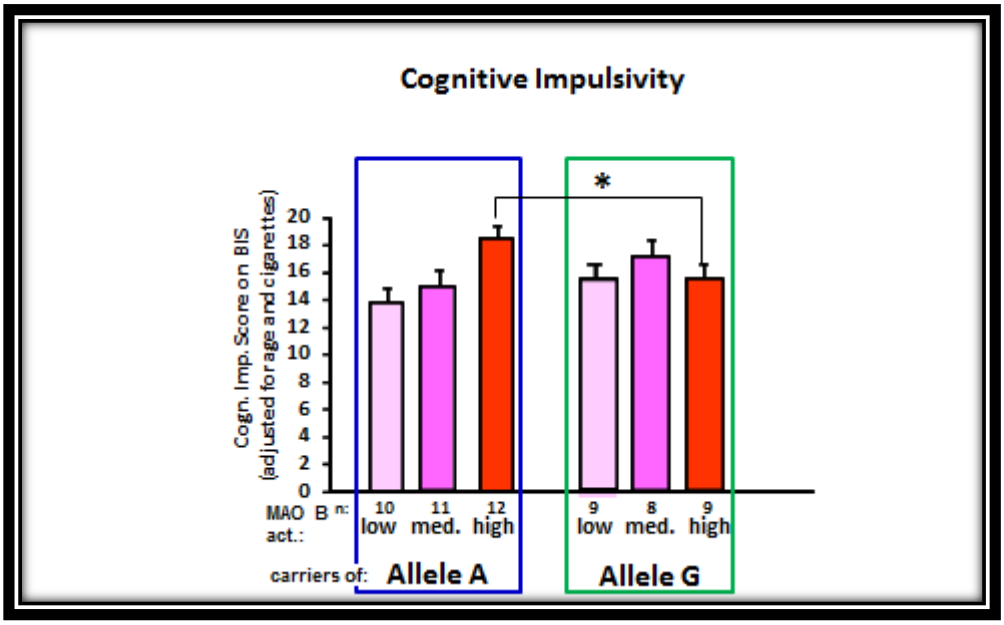

Figure 12 Interaction of MAO B polymorphism with MAO B activity for cognitive impulsivity (age and number of cigarettes used as covariates), effects of MAO B activity: p = .11 ; polymorphism: n.s.; interaction: p = .031.

4.4.4. Relationships between Platelet MAO Activity, MAO B Polymorphism and Aggression/Novelty Seeking

Since overt Aggression and criminality as well as novelty seeking had been reported to be correlated to MAO B activity, spontaneous aggression from the FAF Scale and

experience seeking from the Sensation Seeking Scales were selected for testing associations with the biological markers in our study.

As presented in Figures 13-14 spontaneous aggression seems to be higher in G allele than in A allele carriers (Figure 13), but highest, when combined with the group of low MAO B activity although the interaction did not reach significance (Figure 14).

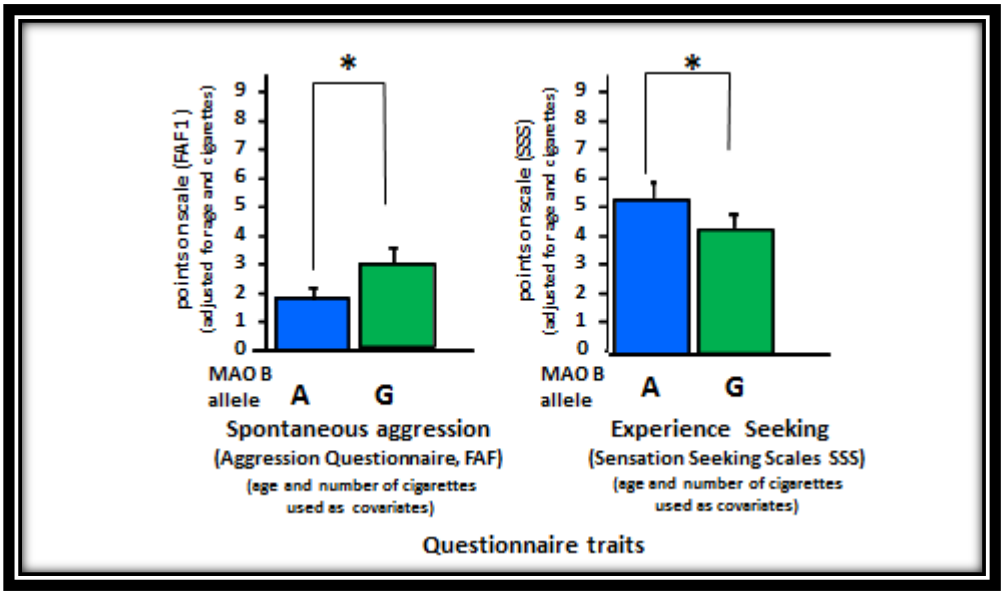

Figure 13 Differences in spontaneous aggression and experience seeking between A and G carriers of the MAO B gene polymorphism.

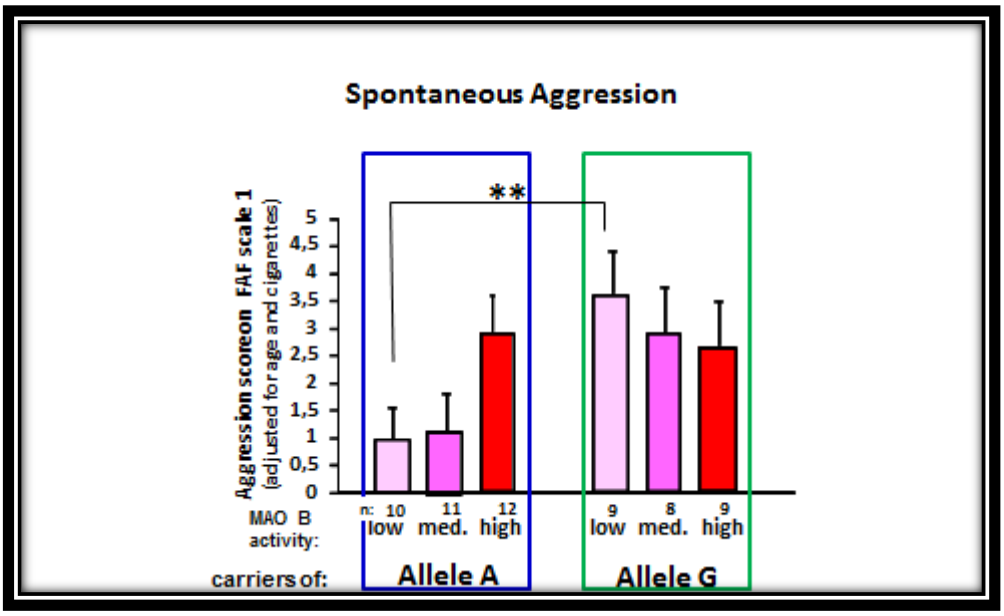

Figure 14 Interaction of MAO B polymorphism with MAO B activity for spontaneous aggression (age and number of cigarettes used as covariates), effect of MAO B polymorphism: p = -043; MAO B activity: n.s.; interaction: p = .116.

Experience seeking, as opposed to Aggression, seems to be higher in A allele carriers than in G carriers (Figure 13), but also tends to be influenced by MAO B activity. Patients exhibiting medium and high MAO B activity score higher on experience seeking than patients with low activity (Figure 15). High MAO B activity and the A genotype seem to produce positive additive effects on experience seeking.

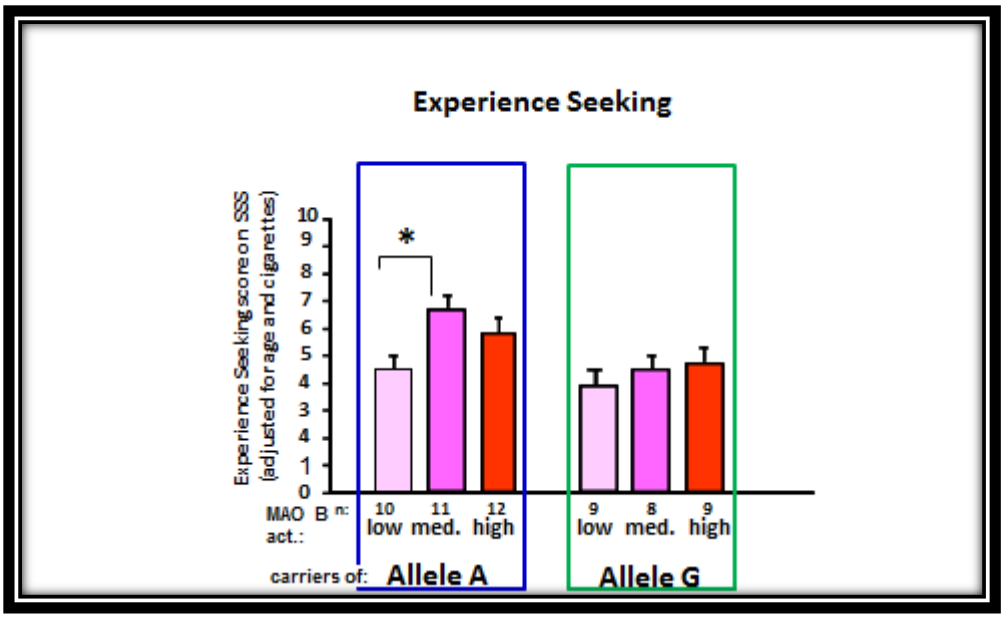

Figure 15 Interaction of MAO B polymorphism with MAO B activity for experience seeking (age and number of cigarettes used as covariates), effect of MAO B activity: p = .051; MAO B polymorphism: p = .016; interaction: n.s..

4.5. Influences of the COMT Polymorphism on Interactions of Platelet MAO Activity and MAO B Polymorphism (Question 2.4.2.)

Since the genotypes of the COMT polymorphism Val158Met had been shown to have partly similar associations with personality traits and psychopathology as MAO B activity and acts synergistically with MAO B in dopamine metabolism, additional influences of the COMT polymorphisms on the MAO B personality relationships were expected. Therefore the first step was to check the allele frequencies for the combined evaluation of the COMT and MAO B gene polymorphisms and to count the number of cases classified as low, medium and high MAO B activity according to the COMT genotyes (Table 15 and 16).

Table 15 Relationship of MAO B gene intron 13 (A/G) and COMT Val158Met polymorphism.

MAO B alleles	A allele	G allele	Total
COMT genotypes			
ValVal	7	7	14
ValMet	16	17	33
MetMet	11	2	13
Total	34	26	60

Table 16 Relationship of COMT Val158Met polymorphism and classes of MAO B activity.

MAO B activity	low	medium	high	Total
COMT genotypes				
ValVal	4	6	4	14
ValMet	11	10	12	33
MetMet	4	3	5	12
Total	19	19	21	59

There were no significant effects of the COMT polymorphism on motor impulsivity or Aggression. But Figure 16 depicts the main effect of the COMT polymorphism and its interaction with MAO B activity classes with respect to cognitive impulsivity. The Figure reveals that the COMT ValVal genotype seems to be associated with highest scores on cognitive impulsivity but that there is no interaction with MAO B activity. The very marginal main effect of MAO B activity classes ($p = .092$) becomes a bit more pronounced ($p = .063$), when combining the Met genotypes to one class as done in Figure 17, where the highly significant effect of the COMT polymorphism again emerges ($p = .002$).

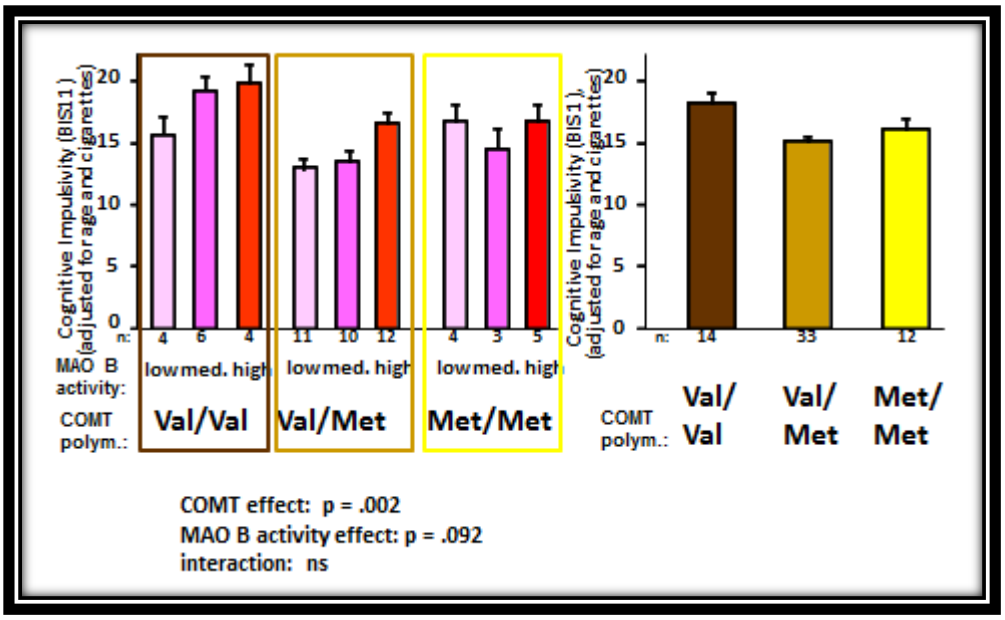

Figure 16 Combined effects of the COMT polymorphism and MAO B activity (age and number of cigarettes used as covariates).

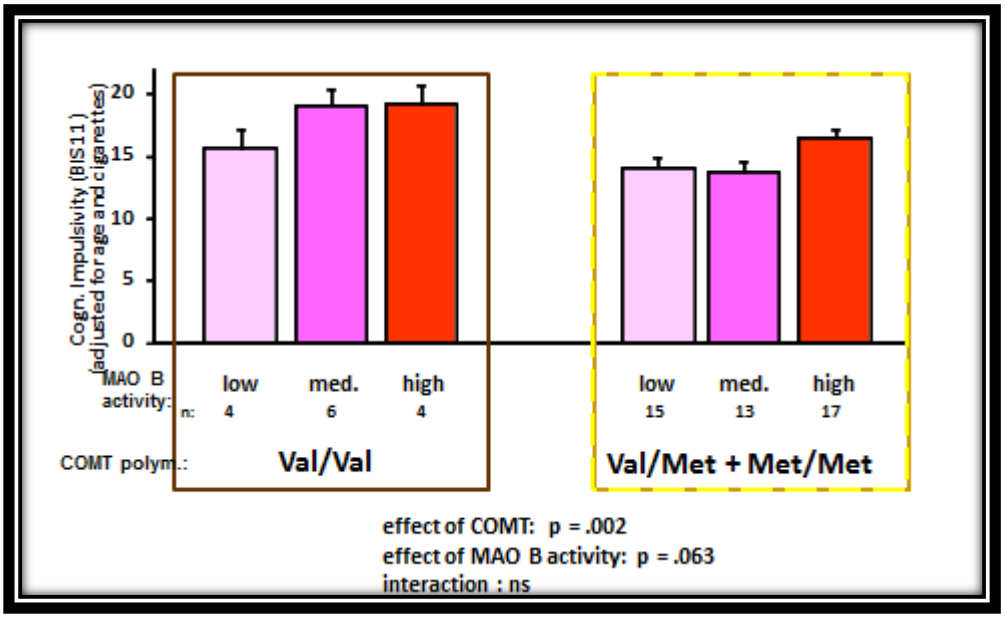

Figure 17 Combined effect of the COMT polymorphism and MAO B activity on cognitive impulsivity (age and number of cigarettes used as covariates).

The endeavor to test for interactions between the COMT and the MAO B polymorphisms is handicapped by the low cell frequency of the combination of MetMet and G as demonstrated in Table 15. Yet the analysis of variance was computed for experience seeking and the results are depicted in Figure 18 for demonstrating a result which may serve as a hypothesis for future evaluations in larger sample sizes.

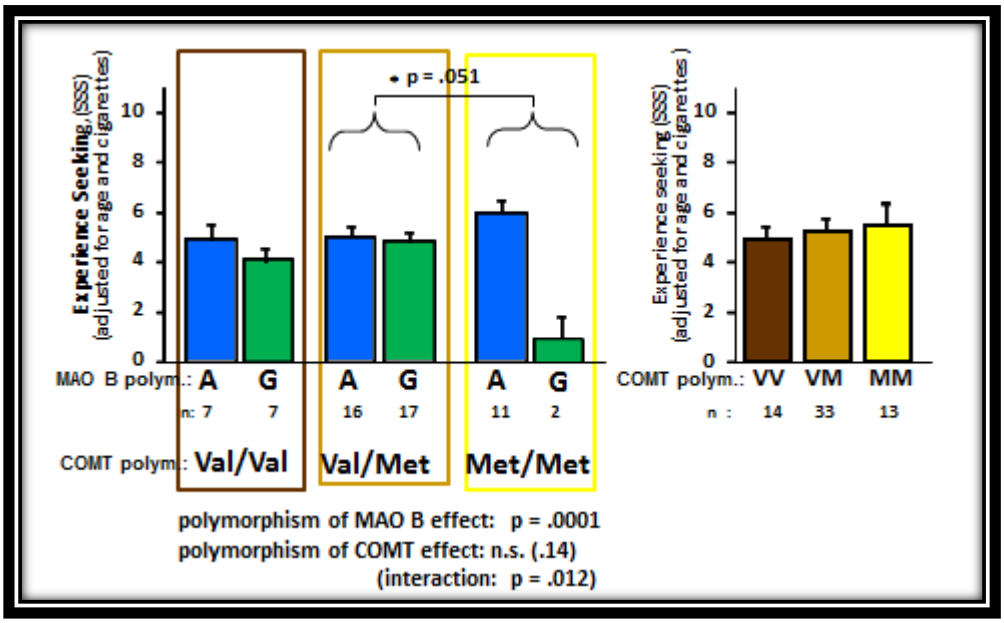

Figure 18 Interaction of COMT and MAO B polymorphism for experience seeking (adjusted for age and number of cigarettes).

The COMT polymorphism by itself did not become significant (p = .14), but it remains to test in the future if low experience seekers will really be found more frequently among the rare type of the combined COMT Met/Met and G genotype of the MAO B gene according to the (virtual) interaction.

4.6. MAO B Activity and Genetics as Related to Factors of Alcohol History

MAO B activity did not reveal any significant associations with the above mentioned factors of alcohol history F1-duration of alcohol dependence, F2-consumption/intake of alcohol, F3-number of detoxifications or severity of craving measured by the ACQ. The same holds for MAO B intron 13 polymorphism and its relationship to the above mentioned factors of alcohol history.

The COMT Val158Met polymorphism was not correlated with the factors of alcohol history F1-duration of alcohol dependence, F2-consumption/intake of alcohol, F3-number of detoxifications or severity of craving measured by the ACQ.

5. Discussion

5.1. Study 1: The Development of a Questionnaire on Daily Frustrations

In study 1, it was tried to construct a questionnaire on reactions to daily frustrations (QDF) suitable to distinguish between frustrations caused by withdrawal of positive reinforcers (nonreward) and by infliction of negative reinforcers (punishment) and to distinguish between human and nonhuman sources of frustration by different response patterns of depressive, indifferent, and aggressive reaction categories to each item. The resulting 2 (positive/negative reinforcers) × 2 (human/nonhuman condition of frustration) = 4 resulting categories in the pilot study served for developing and testing the reliability of the 6 response scales for each category. Resulting internal consistencies were already quite satisfying in study 1, but item analyses had led to elimination of a number of items which had low corrected item total correlations. After elimination of these items and computing revised scales in study 2 the internal consistancies could be improved. This was accepted although the scales were now partly based on a reduced number of items.

Comparison of means between categories in study 1 revealed that it is worthwhile to distinguish between these stimulus categories, because reactions were usually more pronounced when encountering negative reinforcements than when deprived from expected positive stimuli. In particular, the reaction of blaming others was suitable to distinguish between punishment and nonreward and this difference was reversed when comparing responses to human and nonhuman source of frustration. It became evident, however, that in spite of good internal consistencies of the scales comprising the four item categories, some types of reactions cannot be equally well applied to conditions in which human or nonhuman sources of frustration are involved. This also became evident in the clinical sample so that some reactions to single items had to be eliminated due to low part-whole correlations with the scale scores before further analyses with the QDF scales in study 2 as described above in section 5.1..

Furthermore, it was remarkable that aggressive reaction items like getting angry and those of a depressive nature like self-pity were very highly correlated in all stimulus conditions confirming that the revised frustration aggression theory (Miller, 1941) does not imply alternative responses to frustration but that both aggressive and depressive reactions may occur in the same person in the same condition. This also applies to the stronger responses of blaming oneself and blaming others which may also be present simultaneously but in different intensities depending on the type of frustration.

It must be admitted, however, that the sample size of the pilot study on which scale construction was based is extremely small und requires replication in larger samples representing broader distributions of demographic variables. It is hoped that providing the test in the internet will help to test its suitability in different groups of healthy as well as clinical samples.

We are also aware that the distribution of age in that sample was skewed and that motivation for participating was different for students and nonstudents and confounded by age. We therefore computed correlations between age and all the 48 QDF scales. Only two of them reached a significance level of which is compatible with error.

5.2. RELATIONS OF THE QDF TO OTHER VARIABLES

5.2.1. RESPONSES TO FRUSTRATION AS RELATED TO PERSONALITY TRAITS

The evaluations performed in study 2 were based on the concept that Depression and Aggression as measured by personality tests can be understood as continua ranging from normal personality to psychopathology and may, therefore, serve as models for studying Depression and Aggression in clinical samples.

The first aim of the study was to answer the question, if the depressive and aggressive responses to frustrations are mediated by the personality traits of Depression and Aggression, respectively. Instead of single scales, factors derived from several scales measuring Depression and Aggression were applied in order to increase validity. Depressive and aggressive responses to frustrating situations did not turn out to be specific for the respective traits of Depression and Aggression, but rather showed similar correlation patterns with the two dimensions. This could be assumed to be due to the fact that Depression and Aggression are frequently combined in alcoholics (Roberts, 2010; Cloninger, 1987) and might, therefore, also be responsible for the fairly high correlation between the two traits and their overlapping correlations with depressive and aggressive QDF response scales. However, in the healthy sample of study 1 the depressive and aggressive responses to the QDF were also highly correlated and, furthermore, similar correlation patterns with QDF scales were still observed after partialling out the trait score of Depression and Aggression, respectively. So, our data seem to confirm clinical observations of the relationship between Aggression and suicidality (Åsberg et al., 1976; De Rose & Fioravanti, 2010) or the comorbidity of Depression and Aggression, for example, in Attention Deficit Hyperactivity Disorder (DSM-IV) and would fit the idea of disturbances of the serotonin system as a common underlying biochemical basis of aggressive and depressive symptoms (Van Praag, 1996). The finding also confirms the observation that the subscales of outward Aggression and self-accusation in the FAF are positively correlated (Hampel & Selg, 1975) which seems to corroborate the old psychoanalytic view that depressive symptoms of guilt feelings and self-accusation reflect Aggression turned inward (Abraham, 1911; Mentzos, 1997). So, it must be assumed that the data confirm the theory that Depression and Aggression are complementary components of a

psychological disturbance as suggested already by neurochemical findings (Van Praag, 2001; Åsberg et al., 1976).

The second aim was to test if the two aspects of the "punishment" system (withdrawal of reward "pos" and infliction of punishment "neg") according to Gray (1981) can be separated by testing their relation to the dimensions of Aggression and Depression. Our hypothesis was that reactions to frustration from nonreward could be deduced from reports of increased reward sensitivity in certain disorders like impulse control disturbances and substance abuse. Although the two conditions did elicit partly different responses, as shown by differences of means in study 1, it can be concluded from high correlations between corresponding responses to the two conditions that it is hard to separate them. This was the reason that Gray always regarded the two aspects as belonging to the same category of punishment. But yet it seems worthwhile to follow the idea of separable aspects of frustration by improving the questionnaire and applying it in further clinical groups.

The third question related to the discrimination between social and inanimate frustrations was not very much related to the dimensions investigated in this study but was suitable for characterizing symptoms of the alcohol history like resistance to therapy as shown in a different evaluation of the present study (Baars & Netter, 2010; see also next section 5.2.2.).

It must be considered that the only moderate tendency to express anger or to accuse others when frustrated by humans as compared to nonhuman conditions may be a particular feature of alcoholics most of whom have agreed to engage in psychotherapy and probably do not dare to express aggressive thoughts in social contexts being in a clinical setting. Patients high on Aggression scores even tended to accuse themselves when attacked or insulted by another person (Figure 5(b)).

The limitation of this study is, of course in addition to the fairly small number of cases, that the diagnosis of alcoholism was only based on ICD-10 criteria obtained by different psychiatrists. The only common feature was that all patients had undergone detoxification in a psychiatric hospital. Generalizability of results is furthermore limited by the fact that we had only male patients since just the dimensions of Aggression and Depression differ widely in their correlational context between males and females.

5.2.2. PERSONALITY TRAITS AND RESPONSES TO FRUSTRATION AS RELATED TO FACETS OF ALCOHOLISM

The first aim of this study was, to investigate the associations between characteristic personality traits of alcohol dependents and factors of alcohol history and drinking habits. It was remarkable that neither number of detoxifications which may serve as an indicator of liability to relapse nor severity of craving as measured by the ACQ were correlated with age of onset or number of drinks per day. But in spite of a moderate correlation of r = .38 between number of detoxifications and the ACQ score they seemed to be prevalent in partly different types of personality.

Number of detoxifications, corrected for years of dependence, was associated with Aggression and Depression but not significantly with impulsivity. For Aggression this supports findings from studies reporting Cluster B type personality disorders (Zikos, Gill & Charney, 2010), particularly antisocial personality disorders (Sclafani, Finn & Fein, 2007; Wagner, Krampe & Stawicki, 2004), juvenile conduct disorders (Meyers, Brown & Mott, 1995; Pedersen & Hesse, 2009), high scorers on the Eysenck`s Psychoticism scale which measures non-conformity (Müller, Weijers, Böning & Wiesbeck, 2008) or low scorers on cooperativeness (Arnau, Mondon & Santacreu, 2008) as good predictors of relapse. Cluster B personality disorders in the study by Zikos et al. (2010) did not seem to be related to amount of drinking but rather to dropout from treatment indicating independence between the amount consumed and treatment outcome as also in our sample.

However, the low correlation between number of detoxifications and the personality trait of impulsivity is surprising, since most studies revealed strong associations of dependent behavior and impulsivity (Gossop & Eysenck, 1983; Kuntsche et al., 2008; Franken & Muris, 2006) and with personality traits related to lack of persistence which relates to lack of impulse control (Müller et al., 2008). This may be explained by the fact, that several models of alcohol dependence divided patients into more or less severe forms of alcoholism who also seem to differ in personality. Two types of alcohol dependents are described by Cloninger (1987): type 1, depicted as milieu-limited because the environment seems to have a great impact on the development of alcohol dependence, is also characterized by cognitive anxiety and anticipatory worrying, but never has a history of delinquency; type 2 comprising almost exclusively male

alcoholics usually has a paternal history of spontaneous heavy drinking, a history of delinquency, an early onset of drinking (below the age of 25), high scores on somatic anxiety as well as on impulsivity. Both types have an increased risk for alcoholism, but type 2 seems to represent the genetically addictive personality, often prone to additional substance abuse and characterized by high impulsivity.

With regard to our selection criteria it can be assumed that, in our study, we only included type 1 related patients according to Cloninger`s classification, as additional substance dependence was excluded and none of them had a history of delinquency, as could be confirmed from their medical records.

Moreover, the age of onset, serving as a major categorical marker for type 2 alcoholism according to Cloninger (1987) formed a separate factor (F1-duration of alcohol dependence) together with the years of dependence (negative loading) but was independent of number of detoxifications. This factor F1 neither showed the postulated correlation with impulsivity nor with any of the other personality traits nor with responses to frustration. This supports the assumption that type 2 dependent patients had been mostly excluded from our sample.

Previous studies already yielded inconsistent classifications of Cloninger`s type 1 and type 2 according to the age of onset (Sannibale & Hall, 1998), possibly, age of onset fails to subdivide alcoholics into Cloninger`s types, or at least this is the case in the present sample.

Less frequently personality traits or disorders of the depressive type are reported in the context of liability to relapse (Martínez-González, Graña Gómez & Trujillo Mendoza, 2009). The fact that there was a weak association between number of detoxifications and Depression confirms the arguments that our sample predominantly comprised type 1 alcoholics, and indicates that negative events in the environment experienced as particularly severe in depressive patients frequently lead to relapse.

It was interesting to observe that severity of craving as measured by the ACQ score rather seemed to relate to impulsivity and Depression, a combination which would indicate personality disorders of Cluster B as well as C. This confirms findings by Preuss et al. (2009) that severity of alcoholism defined by number of DSM IV symptoms is associated with several of the personality disorders, but the antisocial dimension of Cluster B was associated with early onset and very little with number of DSM IV symptoms. That would confirm that also in our study the trait factor of Aggression was not related to severity of craving.

Despite the significant correlation between severity of alcohol craving, measured by the ACQ, and liability to relapse, represented by number of detoxifications the two variables partly seem to represent different personality and behavioral backgrounds. This discrepancy is depicted by the significant correlations of the ACQ scale with the personality factors impulsivity and Depression on the one hand, and by the associations of number of detoxifications with Aggression and to a lesser degree with Depression on the other hand. Thus, severity of alcohol craving seems to be more related to impulsivity whereas liability to relapse seems to be more pronounced in aggressives, while both have a relationship to Depression.

The second aim of the study was to examine, if frustration from deprivation of rewarding stimuli would show higher correlations with certain features of alcohol history than frustration from encounter with aversive stimuli. This was based on the Sensitivity to Reward Theory by Gray (1981). Therefore the new questionnaire (QDF) was applied which assesses depressive and aggressive responses to frustrations from nonreward and from punishment, respectively, caused by humans or by external obstacles each.

The hypothesis that alcohol dependent males are particularly sensitive to reward could be found to apply to liability to relapse, because correlations between responses to frustrations from nonreward showed higher correlations with numbers of relapses than responses to punishment, particularly in the frustrating situations caused by humans.

Remarkably, number of detoxifications was positively correlated with depressive reactions to withdrawal of reward on the one hand and with the aggressive reaction of getting angry in the same conditions on the other. This matches the finding that on the level of traits, number of detoxifications was significantly associated with the personality dimensions of Aggression as well as with Depression. This supports the psychoanalytic concept by Freud and Abraham (Freud, 1917; Abraham, 1911; Mentzos, 1997) who described Depression to represent auto aggression. Later, Van Praag described a type of suicidal Depression which was found to be related to low serotonergic activity, to be anxiety and/or Aggression driven, stressor-precipitated and possibly leading into alcohol dependence (Van Praag, 2001; 1996).

Concerning the emotional reactions of the QDF number of detoxifications unanimously showed high associations with depressive reaction 1 (happens only to me) whereas the ACQ tended to be associated with external accusation (reaction 6, aggressive). This is in

line with earlier results of depressive disorders being related to liability to relapse (Martínez-González et al., 2009).

So our study besides identifying different patterns of personality as well as of responses to frustration in their relation to aspects of alcoholism demonstrates that the reactions to frustration seems to be more dominant in a person´s behavior when confronted with frustration than the specific condition of the frustration.

There are some limitations of this study which should be discussed. Regarding the newly built Questionnaire on Daily Frustrations it has to be mentioned that it has not been validated yet in other clinical samples. Furthermore, in this clinical sample items with item-total-correlations below r = .30 had been excluded, so different numbers of items within scales and consequently partly lower reliability scores alpha resulted in testing reliability. Another point of criticism is the lack of a healthy control group matched to this clinical sample, in which relationships between tolerance to frustration and personality traits could have been tested.

5.3. MAO B Activity and Genetics as Related to Personality Traits and Responses to Frustration

The genotype of the intron 13 polymorphism did seem to be related to reaction time in the Go/NoGo condition in the way that alcohol dependent men who carry the G allele revealed significantly lower reaction times compared to those with the A genotype. This may raise the assumption that G allele carriers have higher levels of brain dopamine because of lower MAO B activity in brain tissue according to findings of Balciunieni et al. (2002). High dopamine levels have been shown to be associated with impulsivity and may therefore result in faster reaction times in the Go/NoGo task.

Considering the self ratings on impulsivity the result of higher impulsivity in the group of highest MAO B activity does not seem to match the assumption that high MAO B activity is combined with low impulsivity. However, Harro, Fischer, Vansteelandt & Harro (2004) found a bimodal association in smokers: Both, low and high platelet MAO activity in boys at 15 years predicted a higher probability of becoming a smoker.

Another aspect was found by Paaver, Eensoo, Pulver, Aleksander, Harro & Paaver (2006) who stated that non-alcohol-related selfacknowledged risky behavior as a facet of impulsivity was related to higher platelet MAO activity.
In 2007 it had already been investigated by Paaver, Nordquist, Parik, Harro, Oreland & Harro, if impulsivity may be modified by the 5-HTTLPR polymorphism which relates to the activity of the serotonin reuptake transporter. The short allele s of this polymorphism and, in particular, ss homozygotes have frequently been found to be associated with neuroticism, anxiety, Depression and higher vulnerability to stressors (Lesch et al., 1997; Caspi & Moffitt, 2006). In the sample of Paaver et al. (2007) only in ss homozygots MAO B activity was related to impulsivity in the way that persons with low platelet MAO activity showed higher error rates and more impulsive performance in visual information processing (VCT).

In our study the observation of higher cognitive impulsivity in patients with higher MAO activity in A allele carriers may be due to lower dopamine brain levels caused by high activity of brain MAO B found in A allele carriers according to Balciunieni et al. (2002).
This might add to higher platelet activity in the periphery leading to lower dopamine brain levels which are accused to be responsible for attention deficits, a major feature of cognitive impulsivity (Heinz & Smolka, 2006).
So, MAO B activity combined with MAO B intron 13 polymorphism seems to have different effects on two types of impulsivity: motor and cognitive impulsivity. This may be due to the condition that the G allele represents lower MAO B activity in brain nervous tissue as stated by Balciunieni et al. (2002). Lower enzyme activity is supposed to result in high dopamine levels and phenotypic Aggression (Singhal & Telner, 1978).

In 1980, Fowler et al. found that sensation seekers have low MAO B enzyme activity. The finding that experience seekers were more frequently observed among A allele carriers while Aggressivity was associated with the G allele indicates that the two personality traits are probably differently related to the MAO B gene. The personality difference between A and G carriers may also be illustrated by an additional evaluation of the association between the two alleles and response categories of the QDF. Figure 19 shows a highly significant association of the A allele of the MAO B intron 13 genotype with response 2 (try to make the best of it, averaged accross all items) and 5

(blaming oneself, averaged across nonhuman conditions of frustration). These results point to a better way of coping in A allele carriers. But they also seem to be prone to self accusation when things go wrong.

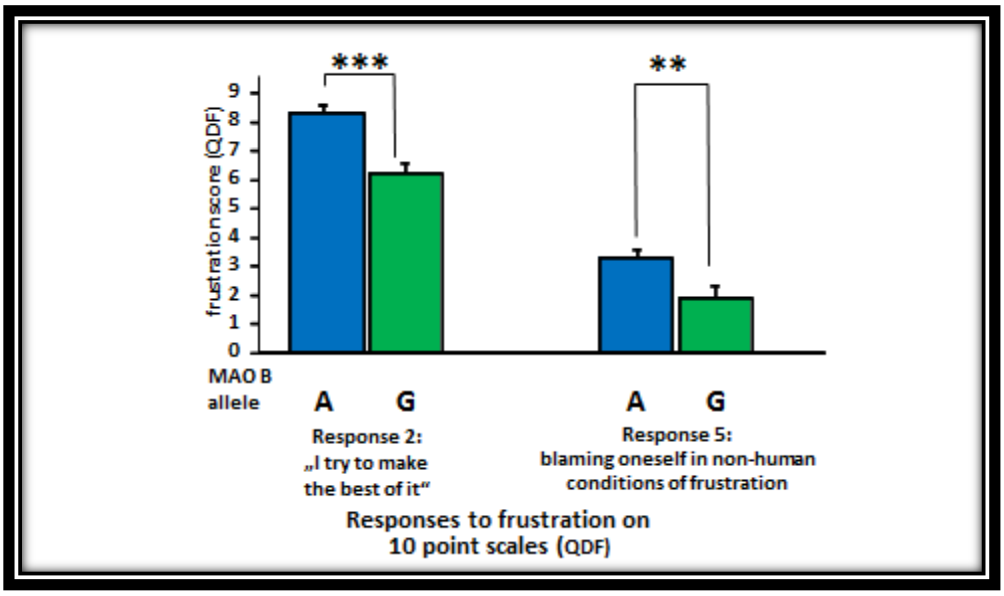

Figure 19 Differences between A and G carriers of the MAO B gene polymorphism in responses to frustration.

The association of the ValVal genotype of the COMT gene with cognitive impulsivity found in our sample would be in line with findings by Heinz & Smolka (2006) who observed attention deficit in ValVal genotype persons.

The MetMet genotype which is supposed to be responsible for a slow metabolism of dopamine at the synapses and the G allele of the MAO B intron 13 polymorphism are rarely observed together, yet the result may point to a meaningful observation, if replicated in a larger sample, that perhaps persons who do have both the Met/Met and G genotype may develop the lowest motivation for experience seeking.

In summary, it can be stated that in the present study platelet MAO activity is likely to have an effect on personality. As could be seen patients of the high enzyme activity

group displayed higher scores in motor impulsivity and slightly higher ones in cognitive impulsivity. The latter is mostly pronounced in the high activity group combined with A allele polymorphism.

The MAO B intron 13 polymorphism seems to influence reactivity in the way that G allele carriers exhibit faster reaction times in the Go/NoGo task.
The trait of Aggression is phenotypically rather expressed in G allele carriers than in A allele carriers, whereas the relation seems to be reversed concerning experience seeking. Considering the COMT Val158Met polymorphism this neither modifies effects of the MAO B intron 13 polymorphism nor of platelet MAO activity. Nevertheless, ValVal carriers seem to reveal a lack of concentration because of higher scores on cognitive impulsivity.

6. CONCLUSIONS

6.1. THE QUESTIONNAIRE ON DAILY FRUSTRATIONS

The newly developed Questionnaire on Daily Frustrations provides the first systematic approach to separate types of frustrating conditions according to withdrawal from positive and infliction of negative reinforcers and according to sources due to human and nonhuman fault requiring 6 identical reactions each.

Internal consistencies: In the pilot study results revealed fair internal consistencies for the reaction scales to the four major item categories, but reliabilities could be improved in the second study after eliminating some items with low item total correlations. Moreover, although the situations could be significantly discriminated into frustrations due to deprivation from reward and application of punishment ("positive" and "negative" frustrations) by the intensities of emotional reactions, the types of depressive and aggressive reactions did not form opposite emotional responses but were positively related, i.e. they are not highly specific for the types of stimulus classes and were both negatively correlated or unrelated to being relaxed or inclined to active coping.

Depressive and aggressive responses: The new aspect contributing to research in frustration is that different responses have been found not to be alternatives varying between persons or within persons across situations as conceived by Miller (1941) in the revised frustration-aggression theory but could be shown to occur simultaneously in the same person and condition. We were also able to contribute to Depression research by demonstrating a very close relationship with Aggression on the level of traits as well as on the level of states. This is suitable to remind psychiatrists and psychologists when performing their clinical assessment with patients, that seemingly contradictory features like Aggression and Depression often have to be considered and diagnosed simultaneously in the same patient. It is intended to try the questionnaire in particular in other clinical groups characterized by Depression and/or Aggression like borderline personality disorder, ADHD, bipolar disorder, and different subgroups of schizophrenics, in order to test, if the QDF may be more suitable to discriminate persons according to responses to punishment and nonreward than it was the case with alcoholics.

Relationships to alcohol history: It may be stated that different aspects of alcohol dependence are partly associated with different personality traits derived from respective personality disorders, liability to relapse being typical for aggressive patients and persons characterized by high alcohol craving being more characterized by impulsiveness and Depression.

In the Questionnaire on Daily Frustrations responses to frustrating conditions seem to be more relevant for variables of alcohol dependence than specificity of frustrating situations. Yet it seems worthwhile to test tolerance to frustration by systematically assessing reactions to nonreward and punishment, because subgroups of alcoholics seem differently sensitive to the two conditions.

Correlations of depressive and aggressive responses to frustration with liability to relapse and intensity of craving were not only mediated by the relevant personality traits, but partly seem to represent genuine features of alcohol dependence.

These results may yield useful information concerning adequate and individual therapy of alcohol dependence.

6.2. MAO B Activity and Genetics

Our results may be suitable to modify the general view that low MAO B activity is indicative of impulsive and aggressive behavior, since our findings of high activity being associated with impulsivity rather point to a U shaped relationship between MAO B and personality.

Concerning the genetic point of view it can be stated that the MAO B intron 13 gene may rather directly or via MAO B brain activity be related to personality. Carriers of the A allele seem to be associated with a better adapted personality, those carrying the G allele with maladapted but faster reacting behavior.

The MAO B intron 13 A/G polymorphism is, as already explained, only one of many genetic polymorphisms related to MAO B activity. Nevertheless, it may serve as a suitable element which in combination with the enzyme activity of MAO B may help to define different endophenotypes in the spectrum of behavior.

Although the polymorphism of the COMT gene did not modify the association of MAO B activity or the MAO B polymorphism with personality traits, the significant association of ValVal carriers of the COMT gene with cognitive impulsivity confirmed its relevance for Attention Deficit Disorder.

SUMMARY

The present work is based on the construction and exploratory implementation of a questionnaire that aims at eliciting aggressive and depressive reactions to frustrations in every day life. These frustrating situations were separated into conditions of withdrawal from positive and inflicition of negative reinforcement, either caused by human or nonhuman involvement applied deliberately or unintentionally. The questionnaire was validated in a group of n = 60 male abstinent alcohol dependents.

The findings revealed that aggressive and depressive responses were highly correlated across all stimulus conditions and not specifically but rather equally associated with the personality factors of Aggression and Depression. This confirms the close association between these dimensions.

Further results yielded significant relationships between factors of alcohol history and personality within the present sample. That is, number of detoxifications reflecting liability to relapse revealed a close association with the personality factors of Aggression and Depression as well as with pronounced reactions to frustrations from nonreward caused by humans.

Severity of craving was associated with impulsivity and Depression. After controlling for impulsivity and Depression persons liable to relapse still emerged as particularly sensitive to frustrations from human denial of positive reinforcers which fits the theory of sensitivity to reward in dependents, whereas aggressive reactions to frustration in persons admitting particularly high alcohol craving were shown to be due to impulsivity and Depression.

Finally, genetics and enzyme activity of monoamine oxidase B were considered. MAO B is involved in the catabolism of dopamine and had been shown to be associated with certain personality traits as well as with alcohol dependence. The present results may be suitable to modify the general view, that low MAO B is associated with impulsivity and Aggression, since they rather point to the possibility of a U shaped association between MAO B activity and personality.

Although platelet MAO activity was not significantly associated with the genotype, the G allele of the genotype was related to faster reaction times in the behavioral impulsivity paradigm.

On the level of self ratings subjects carrying the G allele scored higher on Aggression while the A allele carriers were higher on experience seeking.

MAO B activity, on the other hand, was associated with the BIS 11 Impulsivity Scales. This association remained after controlling for the confounding factors smoking and age. So the two biomarkers evidently differentially affect impulsivity and antisocial behavior.

ZUSAMMENFASSUNG

Die vorliegende Arbeit basiert auf der Konstruktion sowie der explorativen Anwendung eines Fragebogens, der aggressive und depressive Reaktionen auf frustrierende Alltagssituationen eruiert. Diese alltäglichen frustrierenden Ereignisse wurden hinsichtlich des Entzugs positiver sowie des Hinzufügens negativer Verstärker unterschieden, wobei die Frustrationen entweder ohne menschliche Beteiligung oder durch absichtliche beziehungsweise unabsichtliche menschliche Mitwirkung erfolgten. Der Fragebogen wurde anhand einer Stichprobe von n = 60 männlichen abstinenten Alkoholkranken validiert.

Die Ergebnisse zeigten, dass aggressive und depressive Reaktionen über alle Situationen hinweg miteinander korrelierten. Zudem waren sie nicht spezifisch sondern gleichermassen mit den Persönlichkeitsfaktoren Aggression und Depression assoziiert. Dieses bestätigt den engen Zusammenhang dieser Dimensionen.

Weitere Resultate ergaben signifikante Beziehungen zwischen Alkoholismusfaktoren und Persönlichkeit innerhalb der vorliegenden Stichprobe. Faktor F3-Anzahl der klinischen Entzugsbehandlungen, welcher die Wahrscheinlichkeit des Rückfalls widerspiegelt, zeigte einen engen Zusammenhang sowohl mit den Persönlichkeitsfaktoren Aggression und Depression als auch mit einzelnen Reaktionen auf frustrierende Ereignisse durch Entzug positiver Verstärker unter menschlicher Beteiligung.
Der Schweregrad des Verlangens nach Alkohol war mit Impulsivität und Depression assoziiert. Nach Auspartialisierung von Impulsivität und Depression stellte sich heraus, dass die Patienten mit hoher Rückfallwahrscheinlichkeit sich auch dann noch als besonders sensitiv gegenüber Frustrationen durch Entzug positiver Verstärker erwiesen. Dieses entspricht der Theorie zur Sensitivität Abhängiger gegenüber Belohnungen, während aggressive Reaktionen auf Frustrationen bei Patienten, die hohes Substanzverlangen zeigen, für Impulsivität und Depression spricht.

Letztendlich wurden Genetik und Enzymaktivität der Monoaminoxidase B betrachtet. MAO B ist in den Dopaminstoffwechsel involviert und wurde zudem bereits mit

bestimmten Persönlichkeitsfaktoren und mit Alkoholismus in Zusammenhang gebracht. Die aktuellen Ergebnisse mögen die bisherige Auffassung modifizieren, dass niedrige Enzymaktivität der MAO B mit Impulsivität und Aggression im Zusammenhang steht, da die vorliegenden Werte eher auf eine U-förmige Beziehung zwischen MAO B-Aktivität und Persönlichkeit deuten.

Obwohl die MAO B-Aktivität nicht signifikant mit dem Genotyp assoziiert war, zeigte sich ein Zusammenhang des G-Allels mit schnelleren Reaktionszeiten im Verhaltensmass Impulsivität.

Bezüglich der Selbstbeurteilung ergab sich, dass Patienten mit Genotyp G höhere Werte in Aggression aufwiesen, während Träger des A-Allels höhere Werte im Erfahrungssuchen zeigten.

Die Aktivität der MAO B andererseits war mit den BIS 11 Impulsivitätsskalen assoziiert. Dieser Zusammenhang blieb nach Auspartialisierung der Störvariablen Rauchen und Alter bestehen. Beide Biomarker scheinen Impulsivität und antisoziales Verhalten unterschiedlich zu beeinflussen.

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LIST OF TABLES

LIST OF FIGURES

ABBREVEATIONS IN ALPHABETICAL ORDER

5-HIAA	5-hydroxy-indolamino-acid
A	adenine
ACQ	Alcohol Craving Questionnaire
ADHD	Attention Deficit Hyperactivity Disorder
ADS	General Scale on Depression
BAS	Behavioural Activation System
BIS	Behavioural Inhibition System
BIS-11	Impulsivity Scales
COMT	catechol-O-methytransferase
cpm	counts per minute
CSF	cerebro spinal fluid
DALYs	Disability Adjusted Life Years
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders
EDTA	ethylenediaminetetraacetic acid
G	guanine
H	human condition
h+	unintentionally caused frustration
h++	deliberately caused frustration
HCL	hydrogen chloride
I7	Eysenck's Impulsivity scale
IAF	Interaction Anxiety Questionnaire
ICD-10	International Classification of Diseases
MAO	monoamine oxidase
Met	methionine

neg	encounter with negative events
NEO-PI-R	NEO Personality Inventory
NH	nonhuman condition
nmol	nanomol
PCR	polymerase chain reaction
PFT	Rosenzweig Picture Frustration Test
pos	deprivation from positive reinforcers
QDF	Questionnaire on Daily Frustrations
RST	Gray's original Reinforcement Sensitivity Theory
RT	reaction time
SNP	single nucleotide polymorphism
SPSRQ	Sensitivity to Punishment and Reward Questionnaire
SSS-V	Sensation Seeking Scales
Val	valine
WHO	World Health Organization
β-PEA	beta-phenylethylamine

Abbreviations to Figure 1 see page 11.

LIST OF PUBLICATIONS

POSTER PRESENTATION

Baars, M. Y., Müller, M. J., Gallhofer, B., & Netter, P. (2010). ***Nonreward and Punishment as Related to Anxiety and Impulsiveness in Abstinent Alcoholics.*** 3rd Meeting of West European Societies of Biological Psychiatry: Personalized Medicine in Psychiatry: From Dreams to Reality (Berlin, 2010).

ABSTRACT

European Archives of Psychiatry and Clinical Neuroscience, Vol. 260(S1), S49.

POSTER PRESENTATION

Baars, M. Y., Reuter, M., Harro, J., Eensoo, D., Gallhofer, B., Müller, M. J., & Netter, P. (2011). ***Platelet Activity and Genetics of MAO B: How do they Relate to Impulsivity and Aggression?*** 27th Symposium of the AGNP (Munich, 2011).

ABSTRACT

Pharmacopsychiatry, Vol. 6, p284, A6.

PAPER

Baars, M. Y., Müller, M. J., Gallhofer, B., & Netter, P. (2011). ***Depressive and Aggressive Responses to Frustration: Development of a Questionnaire and Its Validation in a Sample of Male Alcoholics.*** *Depression Research and Treatment, vol. 2011,* article ID 352048, 19 pages, doi: 10.1155/2011/352048.

ABSTRACT (TO BE PUBLISHED)

Netter, P., Baars, M. Y., Reuter, M., Montag, C., Harro, J. Eensoo, D., Müller, M. J., & Gallhofer, B. ***Synergistic or Independent Relationships of Platelet MAO Activity, MAO B and COMT Polymorphisms to Impulsivity, Aggression and Novelty Seeking?*** XXVIII. CINP Congress (Stockholm, 2012).

APPENDIX

11/03/2009 13:44 +49-641-9942479 KLIN. PHARMA S. 01/02

JUSTUS-LIEBIG UNIVERSITÄT GIESSEN

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Ethik-Kommission, Gaffkystr. 11c, D-35385 Gießen

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Gießen, 10. März 2009
Dr. Kr./erb

AZ.: 17/09

Titel: *Biologische Marker und Frustrationstoleranz bei Typ I und II Alkoholikern.*

Sitzung am 19.02.2009

Sehr geehrte(r) Antragsteller/Antragstellerin,

wir bedanken uns für die Vorstellung Ihres Forschungsprojektes. Im Folgenden erhalten Sie das Votum der Gießener Ethik-Kommission zur oben genannten Studie:

Es handelt sich um eine Erstbegutachtung für den Leiter der Klinischen Prüfung (LKP) ☒
Es handelt sich um eine Anschlussbegutachtung ☐
Eingesandte Unterlagen:
☒ Formalisierter Antrag
☒ Ausführliche Darstellung des Vorhabens (Detaillierte Beschreibung/Studienprotokoll)
☒ Patienten-/Probandeninformation und -Einwilligungs- und Datenschutzerklärung
☑ Abteilungsleiterhaftpflicht

Der Antrag wurde unter ethischen, medizinisch-wissenschaftlichen und rechtlichen Gesichtspunkten geprüft. Soweit betreffend, wurde **das auf Seite 2 wiedergegebene Protokoll** unter Berücksichtigung des Good Clinical Practice for Trials on Medicinal Products in the European Community (ICH-GCP) erstellt. Es bezieht sich auf die vorgelegte Fassung des Antrags.

Forderungen der Ethik-Kommission, soweit darin aufgeführt, wurden inzwischen erfüllt. ☐
Sie stimmt dem Vorhaben zu. ☒
Sie stimmt dem Vorhaben unter Auflagen zu (siehe S. 2). ☐
Sie stimmt dem Vorhaben nicht zu (siehe S. 2). ☐

Die Ethik-Kommission erwartet, daß ihr bis 31.12.10 ohne Aufforderung ein kurzer Bericht auf beigefügtem (roten) Formblatt übermittelt wird. Er soll mitteilen, ob das Ziel der Studie erreicht wurde, ob ethische, medizinisch-wissenschaftliche oder rechtliche Probleme aufgetreten sind, und ob das Ergebnis publiziert ist/wird. Unabhängig davon ist die Ethik-Kommission über alle Änderungen des Prüfplans zu unterrichten. Ihr sind alle schweren unerwünschten Wirkungen mitzuteilen, soweit sie im Bereich der Zuständigkeit dieser Ethik-Kommission aufgetreten sind. Bei überregionalen Studien sind sie auch dem LKP mitzuteilen.
Die ärztliche und juristische Verantwortung des Leiters der klinischen Prüfung und der an der Prüfung teilnehmenden Ärzte bleibt entsprechend der Beratungsfunktion der Ethik-Kommission durch unsere Stellungnahme unberührt.

11/03/2009 13:44 +49-641-9942479 KLIN. PHARMA S. 02/02

Auszug aus dem Protokoll der Kommissionsitzung vom 19.02.2009:

Frau Prof. Dr. Dr. Netter trägt vor. Hintergrund: Das Ansprechen von Alkoholkranken auf die Alkoholentwöhnungstherapie ist sehr unterschiedlich. Dies könnte mit der Verschiedenheit der Untertypen von Alkoholkranken zusammenhängen. Die Klassifikation von Cloninger unterscheidet einen Typ II-Alkoholkranken (früher Abhängigkeitsbeginn vor dem 25. Lebensjahr, positive Familienanamnese, häufigeres Auftreten bei Männern) und einen Typ I (Auftreten der Krankheit häufig in Zusammenhang mit ungünstigen Lebensereignissen). Auffallend ist beim Typ II eine erniedrigte Aktivität des Enzyms Monoaminooxidase B in den Thrombozyten, die am Dopaminabbau beteiligt ist; Typ II-Kranke weisen höhere Testwerte auf zur Erfassung der Impulsivität und Aggressivität, bei Typ I-Alkoholiker finden sich eher erhöhte Werte in depressiven und neurotischen Symptomen oder Testskalen. Beide Gruppen unterscheiden sich auch in ihrer Reaktion auf frustrierende Ereignisse. Im Rahmen einer Promotionsarbeit sollen darum 2 Gruppen von Alkoholkranken (Typ I und Typ II) hinsichtlich zweier genetischer Polymorphismen, ihrer MAO B-Blutspiegel und ihrer Werte in zwei computer-basierten Tests zur Erfassung der Impulsivität und einem Verhaltensfrage-bogen zur Frustrationstoleranz miteinander verglichen werden. 30 Patienten pro Gruppe sind eingeplant (nur männliche Patienten), Alter 18 bis 60 Jahre. Alle Patienten sind zustimmungsfähig; die Untersuchung soll kurz vor der geplanten Entlassung erfolgen, wenn die Patienten am Ende ihrer akuten Entzugsbehandlung stehen (in der Psychiatrischen Universitätsklinik Gießen und im Lehrkrankenhaus Klinik für Psychiatrie und Psychotherapie Gießen).
In der Diskussion wird von Herrn Apotheker Brumhard darauf hingewiesen, dass natürlich auf die eventuelle Einnahme von MAO-Hemmern (bei vorliegenden depressiven Verstimmungen) geachtet werden muss.
Die Kommission stimmt dem Vorhaben zu.

Wir wünschen Ihnen für Ihr Forschungsprojekt viel Erfolg.

Prof. Dr. K. L. Schmidt
Vorsitzender

Die Namen der bei dieser Sitzung anwesenden Mitglieder sind durch Unterstreichung hervorgehoben.
Mitglieder: Frau Dr. Blütters-Sawatzki (Pädiatrie); Dr. Bödeker (Informatik); Herr Brumhard (Pharmazie); PD Dr. Gödicke (Bürgerliches Recht); Prof. Linn (Innere Medizin), Dr. Repp (Pharmakologie), Prof. Schmidt, Vorsitzender, (Rheumatologie), Prof. Schwemmle, stv. Vorsitzender (Chirurgie); Prof. Rieße (Rechtsmedizin).
Vertreter: Prof. Dreyer (Pharmakologie, Prof. Dudeck (Informatik); Prof. Federlin, (Innere Medizin), Prof. Schapp (Bürgerliches Recht); Frau Prof. Kemkes-Matthes (Innere Medizin); Frau Kreckel (Pharmazie); Prof. Künzel (Gynäkologie); Prof. Lasch (Innere Medizin); Prof. Weiler (Rechtsmedizin).

P.S.: Bitte informieren Sie die Ethik-Kommission unter Benutzung des beigefügten Formulars über den Beginn der Studie!

Studie : Biologische Marker und Frustrationstoleranz von Typ I und Typ II Alkoholikern

Patienten/ Probandenaufklärung und Einverständnis

Biologische und psychische Merkmale bei verschiedenen Typen von Alkoholikern

Lieber Patient

Worum geht es?,(Zielsetzung der Studie)
In der Universität Gießen wird gemeinsam vom Psychologischen Institut und der Klinik für Psychiatrie eine Studie zum Alkoholismus durchgeführt an Personen, die am Ende Ihrer klinischen Behandlung sind
Es geht dabei um die Reaktion auf frustrierende Ereignisse bei verschiedenen Untergruppen von Alkoholkranken und um die Beziehung dieser Reaktionen zu einem Enzym im Blut, das charakteristisch erniedrigt ist beim Alkoholismus. Ferner soll die Beziehung dieser Merkmale zu genetischen Besonderheiten , so genannten Polymorphismen, untersucht werden, d.h. Varianten von Genen , die ebenfalls eine enge Beziehung zum Alkoholismus haben .
Von den Ergebnissen der Studie erhoffen wir uns ein besseres Verständnis über die Ursachen des Alkoholismus und seiner psychischen und biologischen Begleiterscheinungen.
Gegebenenfalls ergibt sich daraus auch eine differenziertere Behandlungsmöglichkeit für verschiedene Gruppen der Alkoholabhängigkeit.

Was müssten Sie tun, wenn Sie bei dieser Studie mitmachen?
Die Untersuchung findet an einem Nachmittag kurz vor Ihrer Entlassung aus Ihrem stationären Kliniaufenthalt in der Psychiatrischen Klinik der Universität Gießen und im Psychiatrischen Landeskrankenhaus in der Licher Straße statt
Dort sollen eine Reihe von Fragebogen ausgefüllt werden, die z.B. abfragen, wie Sie reagieren, wenn Sie frustriert werden, wie Ihre Stimmung, ihre Unternehmungslust und ihre Verhaltenweisen im Umgang mit Konflikten sind, und welche jetzigen und früheren Trink- und Rauch-Gewohnheiten Sie haben.
Zusätzlich werden einige Verhaltensproben am Computer durchgeführt, die das Entscheidungsverhalten messen..
Sie müssten uns auch auf einem Bogen Ihre früheren Trink- und Rauchgewohnheiten angeben und welche Medikamente Sie zur Zeit vor dem Klinikaufenthalt eingenommen haben.
Für die Bestimmung des Blutenzyms und der genetischen Marker benötigen wir eine Blutprobe von etwa 10 Milliliter aus Ihrer Armvene, die von einer Medizinerin abgenommen wird.
Alles zusammen würde etwas 2 Stunden dauern

Was haben Sie selbst von der Teilnahme? (Aufwandsentschädigung)
Es wird für Sie kein persönlicher Nutzen aus der Teilnahme erwachsen, aber Sie erhalten **25 €** als Entschädigung .

Sie können später, wenn die Daten ausgewertet sind, individuell etwas über Ihre Werte erfahren und würden dazu die e-mail-oder Telefon-Nr. der Versuchsleiterin oder Studienleiterin bekommen

Welche Risiken sind mit der Teilnahme verbunden?
In seltenen Fällen kann es bei der Blutentnahme zu einem Bluterguss (blauen Fleck) an der Einstichstelle kommen. Sehr selten kann es auch bei dem Einstich zu einer Nervenschädigung eines Hautnerven kommen

Wie ist der Datenschutz gewährleistet?.
Die Fragebögen und im Computer gespeicherten Testdaten von Ihnen tragen nur eine Nummer, die nur von der Versuchsleiterin Ihrem Namen zugeordnet werden kann, wenn Sie eine nachfolgende Auskunft wünschen. Ansonsten werden die Ergebnisse nur als Gruppen-mittelwerte für wissenschaftliche Auswertungen verwendet. Ihre Namen werden nach Ende der Untersuchung sofort gelöscht.

Was geschieht mit Ihrer Blutprobe?
Die Blutprobe wird ausschließlich für diese wissenschaftliche Studie verwendet. Aus der Blutprobe wird einerseits das Enzym bestimmt, das mit dem Alkoholismus in Verbindung steht, andererseits wird die Variante der Gene bestimmt, die für die Ausprägung dieses Enzyms verantwortlich sind.. Andere Blutwerte oder genetische Informationen, die etwas über Erkrankungen oder Ihre persönliche Identität aussagen, werden nicht aus der Blutprobe bestimmt. Die Labors, in denen die Bestimmungen durchgeführt werden, erhalten nur das Röhrchen mit der Code-Nummer, nicht Ihren Namen. Sobald die Messungen durchgeführt sind, wird die Blutprobe vernichtet.

Rücknahme der Teilnahmebereitschaft
Sie können die einmal gegebene Teilnahmebereitschaft jederzeit und ohne Angabe von Gründen zurückziehen und auch noch während der Untersuchung den Versuch abbrechen, ohne dass Ihnen daraus Nachteile entstehen.

Wie sind Sie versichert?
Da die Untersuchung in der Klinik stattfindet, gelten die allgemeinen Haftungsgrundsätze des Universitätsklinikums

Wo können Sie weitere Informationen erhalten.?
Sie können sich vor, während und nach der Untersuchung mit weiteren Fragen an die Versuchsleiterin oder die Untersuchungsleiterin wenden. Telefonnummern stehen auf der Kopie der Einverständniserklärung, die in Ihren Händen bleibt.

Wenn Sie interessiert wären teilzunehmen, würden Sie damit einen Beitrag zum besseren Verständnis des Alkoholismus und seiner Ursachen leisten, was vielleicht eines Tages zu differenzierteren Behandlungsmethoden führen kann.

Prüfstelle: .....
Prüfarzt: .....

Titel der Studie
deutsch, inklusive Prüfplancode

Einwilligungserklärung

.....
Name des Probanden in Druckbuchstaben

geb. am ..... Teilnehmer-Nr. .....

Ich bin in einem persönlichen Gespräch durch den Prüfarzt

Prof. Netter

.....
Name der Ärztin/des Arztes

ausführlich und verständlich über die zu prüfende Behandlungsmethode und die Vergleichsmethode sowie über Wesen, Bedeutung, Risiken und Tragweite der wissenschaftlichen Studie aufgeklärt worden. Ich habe darüber hinaus den Text der Probandeninformation sowie die hier nachfolgend abgedruckte Datenschutzerklärung gelesen und verstanden. Ich hatte die Gelegenheit, mit dem Prüfarzt über die Durchführung der wissenschaftlichen Prüfung zu sprechen. Alle meine Fragen wurden zufrieden stellend beantwortet.

Ich bin damit einverstanden, dass mir 10 ml Blut aus der Armvene entnommen werden und dass die Blutproben zur Bestimmung des Enzyms Monoaminooxidase und der genetischen Varianten der Gene, die zum Alkoholismus in Beziehung stehen, verwendet werden. Ich bin darüber informiert worden, dass die Blutproben in anonymisierter Form, d.h. nur mit einer Code-Nr. versehen, in zwei verschiedene Labors versandt werden. und dass keine anderen als die angegebenen Messungen im Blut durchgeführt werden.

Ich hatte ausreichend Zeit, mich zu entscheiden.

Mir ist bekannt, dass ich jederzeit und ohne Angabe von Gründen meine Einwilligung zur Teilnahme an der Prüfung zurückziehen kann (mündlich oder schriftlich), ohne dass mir irgendwelche Nachteile entstehen.

Datenschutz:

Mir ist bekannt, dass bei dieser wissenschaftlichen Prüfung personenbezogene Daten, insbesondere medizinische Befunde über mich erhoben, gespeichert und ausgewertet werden sollen. Die Verwendung der Angaben über meine Gesundheit erfolgt nach gesetzlichen Bestimmungen und setzt vor der Teilnahme an der wissenschaftlichen Prüfung folgende freiwillig abgegebene Einwilligungserklärung voraus, das heißt ohne die nachfolgende Einwilligung kann ich nicht an der wissenschaftlichen Prüfung teilnehmen.

1. Ich erkläre mich damit einverstanden, dass im Rahmen dieser wissenschaftlichen Studie personenbezogene Daten, insbesondere Angaben über meine Gesundheit, über mich erhoben und in Papierform sowie auf elektronischen Datenträgern in der Psychiatrischen Klinik der Universität Gießen aufgezeichnet werden. Soweit erforderlich, dürfen die erhobenen Daten pseudonymisiert (verschlüsselt) weitergegeben werden an .das Labor von Prof. Harro, Tartu (Estland) und das Labor von Prof. Reuter, Universität Bonn zum Zwecke der wissenschaftlichen Auswertung.

2. entfällt.

3. Ich bin bereits darüber aufgeklärt worden, dass ich jederzeit die Teilnahme an der wissenschaftlichen Prüfung beenden kann. Im Fall eines solchen Widerrufs meiner Einwilligung, an der Studie teilzunehmen, erkläre ich mich damit einverstanden, dass die bis zu diesem Zeitpunkt gespeicherten Daten nur weiterhin verwendet werden dürfen, soweit dies erforderlich ist, um sicherzustellen, dass meine schutzwürdigen Interessen nicht beeinträchtigt werden. Falls ich meine Einwilligung, an der Studie teilzunehmen, widerrufe, müssen die Daten unverzüglich gelöscht werden.

4. Ich erkläre mich damit einverstanden, dass meine Daten nach Beendigung oder Abbruch der Studie zehn Jahre aufbewahrt werden. Danach werden meine personenbezogenen Daten gelöscht,

6. entfällt

7. Bei Rückfragen kann ich mich wenden an Prof. P. Netter, Telfon: 0641/ 9926065 oder Frau M. Baars Telefon: 06403/ 9689647 oder 0170 7551091

Ich erkläre mich bereit,
an der oben genannten wissenschaftlichen Studie
freiwillig teilzunehmen.

Ein Exemplar der Probanden-Information und -Einwilligung habe ich erhalten. Ein Exemplar verbleibt im Prüfzentrum.

.....
Name des Probanden in Druckbuchstaben

....
Datum Unterschrift des **Probanden**

Ich habe das Aufklärungsgespräch geführt und die Einwilligung des Probanden eingeholt.

.....
Name des Prüfarztes/der Prüfärztin in Druckbuchstaben

....
Datum Unterschrift des aufklärenden **Prüfarztes/der Prüfärztin**

VP.-Nr.:
Datum:

Fragebogen zu Rauchgewohnheiten

Sehr geehrter Teilnehmer,

vielen Dank für Ihr Interesse.
Bitte lesen Sie sich die folgenden Fragen sorgfältig durch und beantworten Sie diese so genau wie möglich.
Falls Sie momentan nicht rauchen, beantworten Sie bitte nur die Fragen **1 bis 3**. Wenn Sie Raucher sind, beantworten Sie bitte die Fragen **1 und 4-13**.

1.) *Wie viele Zigaretten rauchen Sie pro Tag?*

☐	keine	☐	15-19
☐	1-5	☐	20-24
☐	6-9	☐	25-29
☐	10-14	☐	30 und mehr

2.) *Wenn Sie zur Zeit nicht rauchen, seit wann haben Sie damit aufgehört? Bitte geben Sie dies möglichst genau in Tagen, Wochen, Monaten oder Jahren an*
☐ entfällt, habe nie geraucht
Ich rauche seit _____ nicht mehr.

3.) *Wenn Sie zur Zeit nicht rauchen, wie viele Zigaretten haben Sie vorher täglich geraucht?*

☐	entfällt, habe nie geraucht	☐	15-19
☐	1-5	☐	20-24
☐	6-9	☐	25-29
☐	10-14	☐	30 und mehr

4.) *Wie schnell nach dem Aufwachen rauchen Sie Ihre erste Zigarette?*

☐ nach 5 Minuten
☐ nach 6-30 Minuten
☐ nach 31 bis 60 Minuten
☐ nach mehr als 60 Minuten

5.) *Auf welche Zigarette können Sie am wenigsten verzichten?*

☐ auf die erste am Morgen
☐ auf alle späteren im Laufe des Tages

6.) *Finden Sie es schwierig, an Orten auf das Rauchen zu verzichten, wo es verboten ist (zum Beispiel in der Kirche, in der Bücherei, im Kino)?*

☐ ja
☐ nein

VP.-Nr.:
Datum:

7.) *Rauchen Sie häufiger in den ersten Stunden nach dem Aufwachen als während der restlichen Zeit des Tages?*

☐ ja
☐ nein

8.) *Rauchen Sie auch, wenn Sie so krank sind, dass Sie im Bett bleiben müssen?*

☐ ja
☐ nein

9.) *Inhalieren Sie?*

☐ ja
☐ nein

10.) *Rauchen Sie die Woche über gleich viel?*

☐ ja ☐ nein

Falls nein: ☐ wochentags mehr
☐ am Wochenende mehr

11.) *Seit wie vielen Jahren rauchen Sie schon?*

Seit _____Jahren.

12.) *Haben Sie das Rauchen schon einmal aufgegeben?*

☐ ja ☐ nein

Wenn ja: Wie lange liegt der Zeitraum der letzten Nichtrauchphase zurück?
Bitte geben Sie dies möglichst genau in Tagen, Wochen, Monaten oder Jahren an:
Der Zeitraum des Nichtrauchens liegt _____zurück.

13.) *Wie lange haben Sie damals das Rauchen aufgegeben?*
Bitte geben Sie möglichst genau an: Ich habe das Rauchen für einen Zeitraum von _____aufgegeben.

Fragebogen zum Hintergrund von Alkoholabhängigkeit

Code-Nr.	**Geburtsdatum**	**Alter**	**Geschlecht** ☐ männlich ☐ weiblich	**Datum**

Ihr Familienstand
☐ ledig
☐ verheiratet
☐ in Lebensgemeinschaft
☐ geschieden
☐ getrennt lebend
☐ verwitwet

Wie viele Kinder haben Sie?
☐ keine
☐ 1-2
☐ 3-4
☐ mehr als 4

Gibt es in Ihrer Familie Alkoholabhängige?
☐ Eltern
☐ Geschwister
☐ Kinder
☐ Andere
☐ nein

Gibt es in Ihrer Familie Drogenabhängige?
☐ Eltern
☐ Geschwister
☐ Kinder
☐ Andere
☐ nein

Was für einen Schulabschluss haben Sie?
☐ keinen Abschluss
☐ Hauptschulabschluss
☐ Realschulabschluss
☐ Abitur

Sind Sie zur Zeit berufstätig?
☐ nein, arbeitssuchend
☐ nein, in Ausbildung
☐ ja, gelegentlich
☐ ja, Teilzeit
☐ ja, Vollzeit

Seit wie vielen Jahren haben Sie schon Alkoholprobleme?

Wie häufig trinken Sie zur Zeit Alkohol?
☐ gar nicht
☐ gelegentlich
☐ täglich
☐ mehrmals täglich

Wenn Sie zur Zeit trinken, wie viel nehmen Sie zu sich an:

Bier (Gläser/Tag):	*Wein (Gläser/Tag):*	*Spirituosen oder Mixgetränke (Gläser/Tag):*
☐ weniger als 1	☐ weniger als 1	☐ weniger als 1
☐ 1 bis 2	☐ 1 bis 2	☐ 1 bis 2
☐ 3 bis 4	☐ 3 bis 4	☐ 3 bis 4
☐ mehr als 4	☐ mehr als 4	☐ mehr als 4

Wenn Sie zur Zeit nicht trinken, wie lange sind Sie schon abstinent? Geben Sie bitte so genau wie möglich in Tagen, Wochen oder Monaten an:

……

Wie viele abstinente Phasen hatten Sie schon, seit Sie Alkoholprobleme haben?

☐ keine
☐ 1 bis 2
☐ 3 bis 4
☐ mehr als 4

Wenn Sie zur Zeit arbeitslos sind, welchen Hauptgrund hat es Ihrer Meinung nach?

Wie viele Entgiftungen haben Sie schon hinter sich?	**Wie viele stationäre Suchttherapien haben Sie schon hinter sich?**	**Falls Sie momentan nicht arbeiten, wie lange sind Sie schon arbeitssuchend?**
□ keine □ 1 bis 2 □ 3 bis 4 □ mehr als 4	□ keine □ 1 bis 2 □ 3 bis 4 □ mehr als 4	□ weniger als 6 Monate □ 6-12 Monate □ länger als 1 Jahr □ länger als 2 Jahre

Wie viel haben Sie vor der letzten bzw. aktuellen Therapie zu sich genommen an:		
Bier (Gläser/Tag):	*Wein (Gläser/Tag):*	*Spirituosen oder Mixgetränke (Gläser/Tag):*
□ weniger als 1 □ 1 bis 2 □ 3 bis 4 □ mehr als 4	□ weniger als 1 □ 1 bis 2 □ 3 bis 4 □ mehr als 4	□ weniger als 1 □ 1 bis 2 □ 3 bis 4 □ mehr als 4

Zu diesem Fragebogen

In der heutigen Zeit wird Rauchen und Trinken in der Gesellschaft sehr verteufelt, zum Teil sogar ganz verboten. Dabei hat sich aber in verschiedenen Studien herausgestellt, daß Menschen, die gerne rauchen und Alkohol trinken, häufig aktiver, erfolgreicher und geselliger sind. Daher ist es ein Anliegen dieser Untersuchung, herauszufinden, wie sich Leute, die gern Alkohol trinken und solche, die gerne Zigaretten rauchen, voneinander und von solchen unterscheiden, die beides nicht tun, und mit welchen anderen Vorlieben das Rauchen und Trinken einhergeht.

Wir bitten Sie deshalb, die beigefügten Fragebögen ehrlich auszufüllen. Sie werden keiner Aufsichtsbehörde oder Gesundheitskommission zugeführt, und Ihre Angaben bleiben natürlich völlig anonym.

2

Durchkreuzen Sie bitte auf der beigefügten Skala bei jeder Aussage, wie sehr Sie dieser zustimmen können. Je näher das Kreuz an der 1 ist, umso weniger können Sie zustimmen, je näher Ihr Kreuz an der 7 ist, umso stärker trifft die Aussage für Sie zu. Bitte gehen Sie alle Aussagen durch und lassen Sie keine aus. Beachten Sie bitte, daß einige Aussagen ein „nicht" enthalten und völlige Zustimmung (7) dann heißen würde, daß diese Aussage ***nicht*** auf Sie zutrifft.

Wenn von Alkohol die Rede ist, stellen Sie sich dabei bitte jeweils Ihr Lieblingsgetränk vor.

	trifft über haupt nicht zu	trifft ausgesprochen zu
1. Wenn man mir ein alkoholisches Getränk hinstellt, fällt es mir meist schwer, es stehen zu lassen.	1--2--3--4--5--6--7	
2. Meist empfinde ich es nicht als angenehm, Alkohol zu trinken.	1--2--3--4--5--6--7	
3. Im allgemeinen fühle ich mich wohl, wenn ich Alkohol trinken kann.	1--2--3--4--5--6--7	
4. Wenn ich die Chance habe, Alkohol zu bekommen, würde ich ihn im allgemeinen trinken.	1--2--3--4--5--6--7	
5. Ich empfinde es als wunderbar, Alkohol zu trinken.	1--2--3--4--5--6--7	
6. Meistens würde ich Alkohol nicht trinken, auch wenn ich ihn angeboten bekäme.	1--2--3--4--5--6--7	
7. Manchmal fehlt es mir sehr, daß ich keinen Alkohol zu trinken habe.	1--2--3--4--5--6--7	
8. Bei der Arbeit denke ich oft, daß ich, sobald ich nachhause komme, etwas trinken werde.	1--2--3--4--5--6--7	
9. Ich würde mich oft weniger kribbelig fühlen, wenn ich Alkohol hätte.	1--2--3--4--5--6--7	
10. Bei einem Glas Alkohol sehen die Dinge meistens wunderbar und unkompliziert aus.	1--2--3--4--5--6--7	
11. Ich habe oft das dringende Bedürfnis, etwas Alkoholisches zu trinken.	1--2--3--4--5--6--7	
12. Im allgemeinen denke ich bei der Arbeit nicht an alkoholische Getränke.	1--2--3--4--5--6--7	

3

13. Ich hätte meistens die Dinge besser im Griff, wenn ich etwas Alkoholisches zur Hand hätte. 1--2--3--4--5--6--7

14. Ich würde mich im allgemeinen weniger nervös fühlen, wenn ich etwas zu trinken hätte. 1--2--3--4--5--6--7

15. Wenn ich ein Glas Alkohol vor mir habe, kann ich so leicht mich nicht zurückhalten, es auszutrinken. 1--2--3--4--5--6--7

16. Manchmal wünsche ich mir so dringlich, etwas Alkoholisches zu trinken, daß ich den Geschmack förmlich auf der Zunge fühle. 1--2--3--4--5--6--7

17. Oft habe ich das Gefühl, daß nichts schöner wäre, als etwas Alkoholisches zu trinken. 1--2--3--4--5--6--7

18. Es geht mir oft so, daß ich alles tun würde, um ein alkoholisches Getränk zu bekommen. 1--2--3--4--5--6--7

19. Ich habe oft das Gefühl, es wäre ideal, wenn man im Moment etwas Alkoholisches zu trinken hätte. 1--2--3--4--5--6--7

20. Es geht mir oft so, daß ich unbedingt etwas Alkoholisches trinken möchte. 1--2--3--4--5--6--7

21. Ich würde mich weniger reizbar fühlen, wenn ich ein Glas Alkohol zur Hand hätte. 1--2--3--4--5--6--7

22. Ich denke mir oft aus, wie ich mir etwas Alkoholisches besorgen könnte. 1--2--3--4--5--6--7

23. Alles, was ich mir wünsche, ist, etwas Alkoholisches zu bekommen. 1--2--3--4--5--6--7

24. Meistens würde es mir schwerfallen, ein alkoholisches Getränk abzulehnen, wenn es mir angeboten würde. 1--2--3--4--5--6--7

25. Ich könnte mir vorstellen, daß ich ohne Probleme einen Tag ohne ein alkoholisches Getränk auskomme. 1--2--3--4--5--6--7

27. Es geht mir oft so, daß ich mir nichts daraus machen würde, etwas Alkoholisches zu trinken. 1--2--3--4--5--6--7

28. Oft habe ich das Gefühl, ich wäre weniger verspannt, wenn ich ein Glas Alkohol trinken könnte. 1--2--3--4--5--6--7

29. Ich mache mir eigentlich nichts aus Alkohol. 1--2--3--4--5--6--7

30. Wenn ich Alkohol bekommen könnte, würde ich ihn auch meistens gerne trinken. 1--2--3--4--5--6--7

31. Ich kann meistens gut kontrollieren, wieviel Alkohol ich trinke, wenn ich einmal dabei bin.	1--2--3--4--5--6--7
32. Es ist etwas Tolles, Alkohol zu trinken.	1--2--3--4--5--6--7
33. Wenn mir jemand Alkohol anbietet, sage ich meistens nicht nein.	1--2--3--4--5--6--7
34. Ich würde mich meistens weniger unruhig fühlen, wenn ich Alkohol trinken könnte.	1--2--3--4--5--6--7
35. Ich kann leicht übersehen, wieviel Alkohol ich trinken will.	1--2--3--4--5--6--7
36. Ich habe eigentlich kaum das Bedürfnis, Alkohol zu trinken.	1--2--3--4--5--6--7
37. Sobald ich eine Chance habe, gehe ich irgendwo hin, wo ich Alkohol bekommen kann.	1--2--3--4--5--6--7
38. Ich habe im allgemeinen kein besonderes Bedürfnis, Alkohol zu trinken.	1--2--3--4--5--6--7
39. Meist geht es mir so, daß ich mich weniger aufgeregt fühle, wenn ich Alkohol trinke.	1--2--3--4--5--6--7
40. Ich habe im allgemeinen kein besonderes Bedürfnis zu trinken.	1--2--3--4--5--6--7
41. Alkohol befriedigt mich im allgemeinen nicht sonderlich.	1--2--3--4--5--6--7
42. Ich kann der Versuchung leicht widerstehen, Alkohol zu trinken.	1--2--3--4--5--6--7
43. Es würde mir leicht fallen, eine Chance, Alkohol zu bekommen, auszulassen.	1--2--3--4--5--6--7
44. Ich habe manchmal ein sehr starkes Bedürfnis nach Alkohol.	1--2--3--4--5--6--7
45. Wenn man mir ein Glas Alkohol anbieten würde, würde ich es meist unmittelbar auch trinken.	1--2--3--4--5--6--7
46. Alkohol verbessert meistens meine Stimmung.	1--2--3--4--5--6--7
47. Mein Wunsch nach einem Glas Alkohol ist manchmal ganz überwältigend.	1--2--3--4--5--6--7

Questionnaire on Daily Frustrations (Male German Version)

1.)
Sie schauen sich in einem Gemeinschaftsraum in einer Gastwirtschaft eine spannende Sendung im Fernsehen an. Plötzlich schaltet der Gastwirt die Sendung ab, „weil jetzt Feierabend ist"…

Sie sagen sich: „So etwas passiert immer nur mir…"

Sie überlegen sich, wie Sie nun für sich das Beste aus dieser Situation machen können.

Sie werden wütend und fluchen.

Sie denken sich: „Was soll`s, so etwas kann passieren…"

Sie geben sich selbst die Schuld an dieser Situation.

Sie geben dem Beteiligten dafür die Schuld.

2.)
Sie warten in der Schlange an der Kinokasse, um einen Film zu besuchen, auf dessen Premiere Sie schon lange gewartet haben. Als Sie endlich an der Reihe sind, gibt es jedoch keine Karten mehr…

3.)
Sie haben sich große Mühe bei der Auswahl eines Geburtstagsgeschenks für Ihren besten Freund gegeben. Als Sie das Geschenk überreichen, lässt Ihr Freund allerdings durchblicken, dass er es gar nicht gebrauchen kann…

4.)
Sie haben sich sehr auf einen Wochenendtrip mit Ihrer Partnerin gefreut. Aufgrund der Erkrankung einer Angehörigen, die sie für das Wochenende um Hilfe gebeten hat, muss sie jedoch absagen…

5.)
Sie stehen im Supermarkt an der Kasse und haben es sehr eilig. Plötzlich drängelt sich der Kunde, der in der Warteschlange hinter Ihnen steht, einfach an Ihnen vorbei…

6.)
Sie haben sich einen neuen Fotoapparat oder MP3-Player aus dem Katalog bestellt. Als das Gerät nach langer Wartezeit endlich bei Ihnen ankommt, stellen Sie aber fest, dass es nicht funktioniert…

7.)
Sie haben sich viel Mühe gegeben, eine schöne Geburtstagsparty mit Freunden vorzubereiten. Unter den Gästen will aber einfach keine richtige Stimmung aufkommen, und alle machen sich mit verschiedenen Ausreden früh wieder auf den Heimweg…

8.)
Sie haben soeben einen sehr wichtigen und seitenlangen Brief auf dem Computer geschrieben. Als Sie ihn gerade speichern wollen, stürzt Ihr Computer ab und sämtliche Daten gehen unwiederbringlich verloren…

9.)
Sie sind mit dem Auto auf dem Weg zu einer besonderen Abendveranstaltung, auf die Sie sich schon den ganzen Tag gefreut haben. Völlig unerwartet geraten Sie jedoch in einen Verkehrsstau…

10.)
Sie sind auf der Arbeit sehr engagiert und geben Ihr Bestes, aber der Chef nimmt keine Notiz von Ihrer Leistung…

11.)
Sie stehen an der Kasse im Supermarkt und haben es eilig. Als die Kundin in der Warteschlange vor Ihnen gerade bezahlen will fällt ihr auf, dass sie ihr Portemonnaie im Auto vergessen hat und es erst holen muss…

12.)
Sie haben für den Sommerurlaub ein Hotel mit Meerblick gebucht. Dort angekommen stellen Sie jedoch fest, dass direkt vor Ihrem Fenster ein Hochhaus errichtet wurde, welches nun die schöne Sicht auf den Strand versperrt…

13.)
Sie haben an einem Preisausschreiben teilgenommen und werden schriftlich benachrichtigt, 5.000 Euro gewonnen zu haben! Wenig später teilt man Ihnen aber mit, dass aus Versehen einige Daten verwechselt wurden und Sie leider leer ausgehen…

14.)
Mit großer Sorgfalt haben Sie ein schönes Geburtstagsgeschenk für Ihren besten Freund ausgesucht und sind schon ganz gespannt auf seine Reaktion. Als Sie das Geschenk überreichen, stellt Ihr Freund allerdings fest, dass er das Gleiche bereits bekommen hat…

15.)
Sie haben eine Verabredung mit einem Handwerker, der nach Ihrem defekten Abfluss in der Wohnung sehen soll. Als er nicht erscheint und Sie ihn endlich am Telefon erreichen, sagt er, wichtigere Aufträge hätten vor dieser Lappalie Vorrang gehabt…

16.)
Sie verlassen nur für einen Moment Ihre Wohnung bei offener Haustür, ohne einen Schlüssel mitzunehmen. Nach einem kräftigen Windstoß fällt jedoch die Tür hinter Ihnen ins Schloss…

17.)
Sie sind dabei, ein aufwändiges Mittagessen zuzubereiten. Während dessen bekommen Sie einen Anruf von einem Freund und sind so vertieft ins Gespräch, dass in der Küche nebenan das Essen unbemerkt anbrennt…

18.)
Sie haben mit viel Liebe Ihre Geburtstagsparty vorbereitet und freuen sich auf den Besuch Ihrer Freunde, die Sie aus einer anderen Stadt eingeladen haben. Durch ein Unwetter sind aber die Straßen unpassierbar und die Bahnverbindungen unterbrochen, so dass sie alle nicht kommen können…

19.)
Sie haben einen Nachbarn gebeten, Ihnen am Wochenende beim Streichen Ihres Wohnzimmers zu helfen. Als dieser nicht erscheint und Sie abends telefonisch nachfragen erklärt der Nachbar, er habe wegen familiärer Verpflichtungen keine Zeit gehabt…

20.)
Sie geben auf der Arbeit immer Ihr Bestes und sind auch sehr gewissenhaft. Jedoch bekommen Sie immer wieder Kritik von Ihrem Chef zu hören, dass Sie zu langsam sind oder zu viele Fehler machen…

21.)
Sie sitzen gemütlich vor dem Fernseher und sind in einen spannenden Film vertieft. Auf einmal klingeln Verwandte an der Tür, die gerade auf der Durchreise sind…

22.)
Sie sind auf dem Weg zu einem wichtigen Termin. An der Straße bespritzen jedoch durch die Pfütze vorbeifahrende Autos Ihre helle Kleidung…

23.)
Beim Einkaufen haben Sie es sehr eilig. Als Sie nur noch schnell bezahlen wollen, gibt es aber ausgerechnet an Ihrer Kasse ein technisches Problem, so dass Sie länger warten müssen…

24.)
Sie bereiten gerade ein aufwändiges Essen zu, als ein Haustürvertreter Ihnen unbedingt ein Zeitungsabo verkaufen will. Obwohl Sie ihm erklären, Sie seien gerade mit dem Kochen beschäftigt, lässt er sich nicht abwimmeln und das Essen brennt an…

25.)
Spät abends kommen Sie nach Hause und haben furchtbaren Hunger, finden aber nichts mehr zu Essen im Kühlschrank. Als Sie daraufhin zum Imbiss nebenan gehen, hat dieser gerade geschlossen…

26.)
Sie wollen Ihren Hausmüll in die große Tonne bringen. Auf dem Weg dorthin reißt Ihnen jedoch auf halber Strecke der überfüllte Müllbeutel, und alles fällt in den Hausflur…

27.)
Sie sind schon spät dran auf Ihrem Weg zur Arbeit. An der Haltestelle fährt Ihnen dann auch noch der vorerst letzte Bus vor der Nase weg…

28.)
Sie kommen sehr müde nach Hause und freuen sich sehr auf Ihre wohlverdiente Nachtruhe. Nachdem Sie gerade völlig erschöpft ins Bett gefallen sind, fängt das Telefon in voller Lautstärke an zu klingeln…

29.)
In den letzten Tagen hat sich ein riesiger Wäscheberg angesammelt. Als Sie endlich dazu kommen, die Waschmaschine anzustellen bemerken Sie jedoch, dass diese ausgerechnet jetzt nicht mehr funktioniert…

30.)
Sie sind mit dem Auto unterwegs zu einem wichtigen Termin. Unerwartet ist auf Ihrer Strecke jedoch eine 10 km lange Umleitung eingebaut, und Sie kommen zu spät…

31.)
Sie sitzen abends vor dem Fernseher und sind in einen sehr spannenden Film vertieft. Plötzlich gibt es eine Bildstörung…

32.)
Sie sind mit Ihrer Partnerin zu einer Wochenendtour verabredet und freuen sich schon sehr darauf. Während Sie bereits auf sie warten, ruft Ihre Partnerin schließlich an und teilt Ihnen mit, dass sie am Wochenende lieber ein Musical besuchen will…

(SPSRQ)

1.) Tun Sie manche Dinge lieber nicht, weil Sie Angst haben, dass es illegal ist?

ja ***eher ja*** ***eher nein*** ***nein***

2.) Motiviert es Sie, etwas zu tun, wenn es Geld dafür gibt?

ja ***eher ja*** ***eher nein*** ***nein***

5.) Haben Sie oft Angst vor neuen oder unerwarteten Situationen?

ja ***eher ja*** ***eher nein*** ***nein***

7.) Fällt es Ihnen schwer, jemanden anzurufen, den Sie nicht kennen?

ja ***eher ja*** ***eher nein*** ***nein***

9.) Versuchen Sie oft, auf Ihre Rechte zu verzichten wenn Sie wissen, dass Sie damit einen Streit mit jemandem oder einer Institution vermeiden könnten?

ja ***eher ja*** ***eher nein*** ***nein***

10.) Tun Sie oft etwas, um gelobt zu werden?

ja ***eher ja*** ***eher nein*** ***nein***

12.) Mögen Sie auf einer Party oder einer gesellschaftlichen Veranstaltung gerne im Mittelpunkt stehen?

ja ***eher ja*** ***eher nein*** ***nein***

14.) Verwenden Sie viel Zeit darauf, einen guten Eindruck zu machen?

ja ***eher ja*** ***eher nein*** ***nein***

15.) Lassen Sie sich in schwierigen Situationen leicht entmutigen?

ja ***eher ja*** ***eher nein*** ***nein***

17.) Sind Sie schüchtern?

ja ***eher ja*** ***eher nein*** ***nein***

18.) Versuchen Sie, Ihre Meinung möglichst intelligent und witzig vorzutragen, wenn Sie in einer Gruppe sind?

ja ***eher ja*** ***eher nein*** ***nein***

21.) Fällt es Ihnen schwer, in einer Gruppe ein gutes Gesprächsthema zu finden?

ja ***eher ja*** ***eher nein*** ***nein***

22.) Haben Sie als Kind immer versucht etwas zu tun, was bei anderen Menschen Anerkennung findet?

ja ***eher ja*** ***eher nein*** ***nein***

24.) Motiviert es Sie etwas zu tun, das Ihnen soziale Anerkennung verschafft, auch wenn Sie sich dabei nicht an faire Spielregeln halten können?

ja ***eher ja*** ***eher nein*** ***nein***

25.) Überlegen Sie es sich mehrmals, ehe Sie sich im Restaurant über die Zubereitung des Essens beschweren?

ja ***eher ja*** ***eher nein*** ***nein***

26.) Bevorzugen Sie Aktivitäten, die einen sofortigen Gewinn versprechen?

ja ***eher ja*** ***eher nein*** ***nein***

27.) Ist es Ihnen peinlich, in ein Geschäft zurückzugehen, wenn Sie entdecken, dass Sie falsches Wechselgeld bekommen haben?

ja ***eher ja*** ***eher nein*** ***nein***

30.) Macht es Ihnen Spaß mit anderen zu wetteifern und alles dranzugeben, damit Sie gewinnen?

ja ***eher ja*** ***eher nein*** ***nein***

33.) Würde es Ihnen etwas ausmachen, Ihren Vorgesetzten um eine Gehaltserhöhung zu bitten?

ja ***eher ja*** ***eher nein*** ***nein***

35.) Versuchen Sie es meist zu vermeiden, in der Öffentlichkeit zu sprechen?

ja ***eher ja*** ***eher nein*** ***nein***

37.) Meinen Sie, dass Sie im allgemeinen mehr Dinge tun könnten, wenn Sie nicht so unsicher und ängstlich wären?

ja ***eher ja*** ***eher nein*** ***nein***

38.) Tun Sie manchmal etwas, das einen schnellen Gewinn (oder Erfolg) verspricht?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

39.) Würden Sie sagen, dass Sie vor mehr Dingen Angst haben als andere Menschen, die Sie kennen?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

41.) Grübeln Sie manchmal so intensiv über irgendwelche Dinge nach, dass es Ihre geistigen Leistungen beeinträchtigt?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

42.) Bedeutet Ihnen Geld soviel, dass Sie dafür auch riskante Jobs annehmen würden?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

43.) Unterlassen Sie manchmal etwas, das Sie gern tun würden, damit Sie nicht zurückgewiesen oder abgelehnt werden?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

44.) Macht es Ihnen bei allem, was Sie tun mehr Spaß, wenn Sie mit anderen dabei wetteifern können?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

45.) Achten Sie im allgemeinen mehr auf bedrohliche als auf erfreuliche Ereignisse?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

46.) Möchten Sie in den Beziehungen zu Ihren Mitmenschen eine einflussreiche Rolle spielen?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

47.) Unterlassen Sie oft eine Sache, weil Sie Angst haben, dass Sie sich verlegen fühlen würden?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

48.) Mögen Sie gern Ihre körperlichen Fähigkeiten zur Schau stellen, auch wenn damit Gefahren verbunden sein könnten?

ja ☐ ***eher ja*** ☐ ***eher nein*** ☐ ***nein*** ☐

PI7

Sie können die folgenden Fragen mit **„ja = trifft zu"** bzw. **„nein = trifft nicht zu"** beantworten. Setzen Sie bitte ein Kreuz (x) in das dafür vorgesehene Kästchen. Es gibt keine richtigen oder falschen Antworten. Antworten Sie bitte so, wie es für Sie zutrifft.

1.	Kommt es vor, daß Sie Dinge spontan kaufen?	ja ❐	nein ❐
2.	Macht es Ihnen etwas aus, wenn Sie jemandem Geld schulden?	ja ❐	nein ❐
3.	Tun und sagen Sie im allgemeinen Dinge, ohne vorher zu überlegen?	ja ❐	nein ❐
4.	Würde es Sie sehr aus der Fassung bringen, wenn Sie ein Kind oder ein Tier leiden sehen?	ja ❐	nein ❐
5.	Geraten Sie oft in Schwierigkeiten, weil Sie Dinge tun, ohne sie sich vorher zu überlegen?	ja ❐	nein ❐
6.	Haben Sie eine Abneigung gegen Leute, die sich nicht zu benehmen wissen?	ja ❐	nein ❐
7.	Sind Sie ein impulsiver Mensch?	ja ❐	nein ❐
8.	Sollte man immer das Gesetzt befolgen?	ja ❐	nein ❐
9.	Denken Sie gewöhnlich erst sorgfältig nach, bevor Sie etwas tun?	ja ❐	nein ❐
10.	Sind gute Manieren wichtig?	ja ❐	nein ❐
11.	Tun Sie Dinge oft aus einem momentanen Gefühl heraus?	ja ❐	nein ❐
12.	Würden Sie Drogen nehmen, die seltsame oder gefährliche Auswirkungen haben könnten?	ja ❐	nein ❐
13.	Denken Sie meistens gründlich nach, bevor Sie etwas sagen?	ja ❐	nein ❐
14.	Sind gutes Benehmen und Sauberkeit wichtig für Sie?	ja ❐	nein ❐
15.	Geraten Sie häufig in Situationen hinein, von denen Sie später wünschen, Sie kämen wieder heraus?	ja ❐	nein ❐
16.	Sind Sie der Meinung, daß die Ehe eine altmodische Sache ist und abgeschafft werden sollte?	ja ❐	nein ❐
17.	Begeistern Sie sich manchmal so sehr für neue und aufregende Ideen, daß Sie mögliche nachteilige Folgen übersehen?	ja ❐	nein ❐
18.	Stört es Sie, wenn Sie bemerken, daß Sie Fehler in Ihrer eigenen Arbeit gemacht haben?	ja ❐	nein ❐
19.	Brauchen Sie viel Selbstkontrolle, um sich aus Schwierigkeiten herauszuhalten?	ja ❐	nein ❐
20.	Vermeiden Sie es, grob zu anderen Leuten zu sein?	ja ❐	nein ❐
21.	Sind Sie oft überrascht über die Reaktionen der Leute auf das, was Sie tun oder sagen?	ja ❐	nein ❐

PI7

22. Ist „erst denken, dann handeln" Ihr Grundsatz?	ja ❐	nein ❐
23. Glauben Sie, daß ein Abend außer Haus erfolgreicher verläuft, wenn er nicht im voraus geplant ist?	ja ❐	nein ❐
24. Ist es besser, sich an die Regeln der Gesellschaft zu halten, als seinen eigenen Weg zu gehen?	ja ❐	nein ❐
25. Ändern sich Ihre Interessen häufig?	ja ❐	nein ❐
26. Hätten Sie es gern, daß andere Leute Sie fürchten?	ja ❐	nein ❐
27. Schreien Sie zurück, wenn Sie angeschrien werden?	ja ❐	nein ❐
28. Glauben Sie, daß man gegenüber der eigenen Familie eine besondere Verpflichtung hat?	ja ❐	nein ❐
29. Treffen Sie Ihre Entscheidungen gewöhnlich schnell?	ja ❐	nein ❐
30. Wägen Sie alle Vor- und Nachteile ab, bevor Sie sich für etwas entscheiden?	ja ❐	nein ❐
31. Ziehen Sie es vor, eine Sache zu überschlafen, bevor Sie eine Entscheidung treffen?	ja ❐	nein ❐

EIDESSTATTLICHE ERKLÄRUNG

„Hiermit erkläre ich an Eides statt, dass ich die vorliegende Arbeit selbständig und ohne unzulässige Hilfe oder Benutzung anderer als der angegebenen Hilfsmittel angefertigt habe. Alle Textstellen, die wörtlich oder sinngemäß aus veröffentlichten oder nichtveröffentlichten Schriften entnommen sind, und alle Angaben, die auf mündlichen Auskünften beruhen, sind als solche kenntlich gemacht. Bei den von mir durchgeführten und in der Dissertation erwähnten Untersuchungen habe ich die Grundsätze guter wissenschaftlicher Praxis, wie sie in der „Satzung der Justus-Liebig-Universität Gießen zur Sicherung guter wissenschaftlicher Praxis“ niedergelegt sind, eingehalten. Ich versichere, dass Dritte von mir weder unmittelbar noch mittelbar geldwerte Leistungen für Arbeiten erhalten haben, die im Zusammenhang mit dem Inhalt der vorgelegten Dissertation stehen, und dass die vorgelegte Arbeit weder im Inland noch im Ausland in gleicher oder ähnlicher Form einer anderen Prüfungsbehörde zum Zweck einer Promotion oder eines anderen Prüfungsverfahrens vorgelegt wurde. Alles aus anderen Quellen und von anderen Personen übernommene Material, das in der Arbeit verwendet wurde oder auf das direkt Bezug genommen wird, wurde als solches kenntlich gemacht. Insbesondere wurden alle Personen genannt, die direkt an der Entstehung der vorliegenden Arbeit beteiligt waren.

Mit der Überprüfung meiner Arbeit durch eine Plagiatserkennungssoftware bzw. ein internetbasiertes Softwareprogramm erkläre ich mich einverstanden.“

Datum:

Unterschrift

(Melanie Baars)

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Der Lebenslauf wurde aus der elektronischen Version der Arbeit entfernt.

The curriculum vitae was removed from the electronic version of the paper.