Interpersonal problems among psychiatric outpatients.

A study of interpersonal problems and their associations with symptoms and forms of self-relatedness.

Espen Bjerke

“The unique contribution of psychoanalysis is the demonstration of the power and persistence of the intrapsychic determinants. But these determinants become only artificial abstractions if they are dealt with in isolation from the interpersonal context in which they find expression” (Merton Gill, 1982, p. 92)
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1 ACKNOWLEDGEMENTS

I am indebted to many persons and institutions for being able to accomplish this dissertation. At
the district psychiatric center in Moss, we had collected an impressive amount of self-report data
from the beginning of the 2000’s. Always interested in research, I grabbed the opportunity when
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the Inventory of interpersonal problems, as well as the other psychometric instruments we
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2 ABSTRACT

Interpersonal theory emphasizes the role of interpersonal problems in the formation and maintenance of psychopathology. Several inventories have been developed to assess interpersonal phenomena, like interpersonal styles, motives or problems. The Inventory of Interpersonal Problems (IIP-64) is one of the most frequently used instruments, as a research tool and in clinical settings. The validity of the IIP-64 has been supported in investigations of its internal structure and relations with therapeutic alliance, psychotherapy outcome and various forms of psychopathology, especially personality disorders. To our knowledge, no previous studies have examined the specific kinds of interpersonal problems, including their associations with symptoms and self-image, characteristic of a general psychiatric outpatient population. Do they differ from the normal population in any specific way, apart from the expected “more of everything”? And are there specific relationships between the interpersonal problems they report and the nature of their psychiatric symptoms and their characteristic ways of relating to themselves? The psychiatric diagnostic systems DSM-IV and ICD-10 represent relatively non-theoretical descriptions of psychopathology. An interpersonal perspective may offer valuable additional diagnostic information.

The clinical sample used in this study comprises 988 consecutively admitted first admission adult psychiatric outpatients to a clinic that covers a population of 60000 persons. Exclusion criteria were: Emergency cases, non-native to the Norwegian language, and specific referral requests, e.g. for ADHD evaluations. Patients approached were sent a booklet, and asked to fill in a number of self-report instruments (IP-64, SCL-90-R and SASB introject) before the first consultation at the clinic. The 988 patients that provided the requested data comprised approximately 80 % of the patients approached. Mean age in the sample was 35 years (range from 16 to 77 years). Women comprised 64 %.

Three specific aims were addressed. The first aim was to determine the characteristics of the clinical sample, in terms of interpersonal problems, as compared to a Norwegian normal reference sample. Profile characteristics of eight interpersonal subgroups (octant groups), corresponding to eight different forms of predominant interpersonal problem, were calculated, according to a method known as the structural summary method. This method offers measures of general interpersonal distress, as well as indicators of the specific quality and intensity of such distress. Is
the distress, for instance, mainly of an intrusive, vindictive or a non-assertive kind? And how intense are the problems of that kind?

The clinical sample reported considerably more interpersonal problems than the normal reference sample. Among the eight octant groups with differing predominant interpersonal problems, the three most prevalent in the sample (comprising 56.7%), were all characterized by interpersonal submissiveness (low agency). These patients also reported the highest levels of overall interpersonal problems.

The second aim was to study hypothesized associations between interpersonal problems and symptoms, assessed with the Symptom Check List-90 (SCL-90-R) in the same clinical sample. In general, strong associations between interpersonal problems and symptoms were found. In addition, we found associations between specific forms of interpersonal problems and specific types of symptoms. Interpersonal problems of the Vindictive kind were significantly associated with symptoms of Hostility and Paranoid Ideation, and interpersonal problems of the Socially Inhibited kind were significantly associated with symptoms of Phobic Anxiety.

The third aim was to examine, in the same sample, hypothesized associations between interpersonal problems and self-relatedness. Dividing the self-relatedness variable into Self-Hostile and Self-Accepting components demonstrated that the interpersonal octant groups differed significantly on Self-Acceptance, but not on Self-Hostility. A relatively positive and Self-Accepting self-image appeared to be associated with both cold/domineering and warmer types of interpersonal problems.

In sum, the present studies draw attention to the forms and intensity of interpersonal problems in a large psychiatric outpatient sample, and the specific associations between these problems and symptoms and forms of self-relatedness. The findings from these studies may be of significance for diagnostic assessment, treatment planning, and treatment delivery in mental health care.

3 PREFACE

This study originated from the psychiatric outpatient clinic in Moss, and the clinic’s participation in the Norwegian Multisite Study of Process and Outcome of Psychotherapy (NMSPOP) (Havik...
et al. 1995). As local coordinator, I was responsible for collecting data, among them the self-reports of Inventory of interpersonal problems – 64 items version (IIP-64), Symptom Check List – 90 items – Revised version (SCL-90-R), and Structural Analysis of Social Behavior (SASB) introject. The NMSPOP developed data programs permitting graphic representation of the self-reports in the form of circular (radar) or column diagrams. After termination of the NMSPOP-project the outpatient clinic, under the supervision of Professor Jon T. Monsen, University of Oslo, continued to collect self-reports from newly admitted patients. The three main self-report inventories applied in the NMSOP were included, tapping three aspects of psychological distress: interpersonal problems, self-image and symptoms. These are regarded as relatively theory-neutral and they are internationally acknowledged instruments for the assessment of diagnosis, treatment process and outcome of psychotherapy. They also contribute with a different source of information, i.e. the self-report perspective, in addition to the ordinary, “objective”, clinical expert perspective. The data was used individually, i.e. by showing and discussing the scores and graphs with the patient, before and during therapy. It was stimulating, for the patient as well as for the therapist, to inspect the IIP-64 scores, typically forming an “interpersonal spaceship” (Wiggins et al., 1989) in the radar-graph; especially when it changed direction from the cold to the warm side of the interpersonal circle during therapy. In addition to the graphs, the data program also provided the patient’s scores on each item, systematically arranged and grouped under the subscale/cluster where it belonged. While most patients tended to recognize concrete interpersonal behaviors as described by the IIP-64 items, the subscale scorings depicted problem formulations on a conceptual level reflecting specific interpersonal styles (e.g. self-sacrificing, nonassertive, etc.). Recognition on this level of abstraction clearly seemed to facilitate pattern recognition and constituted a good basis for the therapeutic work with the patient.

When the regional health authorities increased emphasis and funding of clinical research outside the university clinics, around 2005, it became possible to perform more systematic research on how IIP-64 (and the other self-report instruments applied) might be useful in the clinic, as supplementary diagnostics (supplementing ICD-10/DSM-IV), and as predictor in treatment planning.

The main focus of this project has been the examination of pre-treatment self-reports of interpersonal problems in a large clinical outpatient sample, and what characterizes the sample with regard to interpersonal problems, symptoms and self-relatedness, when the eight subtypes, called octant groups, of interpersonal problems are utilized as an independent (grouping) variable.
4 LIST OF PAPERS

PAPER I:


PAPER II:


PAPER III:


5 LIST OF ABBREVIATIONS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AFF</td>
<td>Affiliation dimension of SASB-Introject</td>
</tr>
<tr>
<td>ANOVA</td>
<td>Analysis of variance</td>
</tr>
<tr>
<td>ANCOVA</td>
<td>Analysis of covariance</td>
</tr>
<tr>
<td>DSM IV/DSM V</td>
<td>Diagnostic and Statistical Manual of Mental Disorders</td>
</tr>
<tr>
<td>GLM</td>
<td>General Linear Model</td>
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<tr>
<td>GOF</td>
<td>Goodness of Fit</td>
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<tr>
<td>GSI</td>
<td>Global Severity Index</td>
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<tr>
<td>IAS</td>
<td>Interpersonal Adjective Scale</td>
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</table>
IIP-64 - Inventory of Interpersonal Problems – 64 items version

Interpersonal subscales/subtypes:

PA - Domineering
BC - Vindictive
DE - Cold
FG - Socially Inhibited
HI - Nonassertive
JK - Overly Accomodating
LM - Self-Sacrificing
NO - Intrusive

IPC - Interpersonal Circle/Circumplex

PD - Personality Disorder
SASB - Structural Analysis of Social Behavior
SCL-90-R - Symptom Check List – 90 items - Revised

Symptom subscales:

SOM - Somatization
O-C - Obsessive-Compulsive
INT - Interpersonal Sensitivity
DEP - Depression
ANX - Anxiety
HOS - Hostility
PHO - Phobic Anxiety
PAR - Paranoid Ideation
PSY - Psychoticism
6 BACKGROUND

Horowitz (2004) claims that the interpersonal approach is the one most compatible with other theoretical approaches to psychopathology, as it encompass both biological, cognitive-behavioral, humanistic and psychodynamic aspects.

Interpersonal theory emphasizes the role of interpersonal problems in the formation and preservation of psychopathology; it postulates how interpersonal behaviours are psychologically motivated, how frustrated or conflicted motives may lead to interpersonal problems and symptoms, and, eventually, to enduring maladaptive personality traits, manifested as different forms of personality disorders (Horowitz, 2004; Pincus & Wiggins, 1990). Based on attachment theory, Bartholomew & Horowitz (1991) proposed how the four basic attachment styles (secure, dismissing, preoccupied and fearful/avoidant) could be used to clarify a person’s motives in interpersonal relationships. They have also demonstrated how the different attachment styles correspond to different interpersonal profile types (Bartholomew & Horowitz, 1991).

6.1 The birth of interpersonal theory

Harry Stack Sullivan (1892-1949) is considered to be the father of interpersonal theory. He introduced the term “interpersonal” in the nineteen-twenties, and described the human personality as “the relatively enduring pattern of recurrent interpersonal situations which characterize a human life” (Sullivan, 1953, pp. 110-11). He claimed that social relations are at the heart of psychopathology. Working with schizophrenic patients from the 1920s, he opposed the prevailing theory of schizophrenia as a disease of irreversible neurological deterioration. He was ambivalent to Freud’s psychoanalysis; on the one hand, psychodynamic theory gave meaning to many neurotic symptoms and complaints, just as Sullivan’s own interpersonal approach gave meaning to the behaviour of patients with schizophrenia. On the other hand, when Freud abandoned his interpersonal seduction theory and launched the intrapsychic theory of drives and children’s sexuality, this established a new way of thinking that Sullivan was in disagreement with. He developed his own view of the mind and psychopathology, implying partial acceptance and partial rejection of Freud’s metapsychology. Many modern interpersonalists, who consider Sullivan’s theories regarding “the inner world” somewhat lacking, have found complementary and useful theories among the object-relations theoreticians of the “British school”, e.g. Fairbairn and
Winnicott, who, in addition to emphasis on the interpersonal, also have maintained a clear focus on the intrapsychic domain (Mitchell 1988).

6.2 The circular structure of interpersonal styles and problems.

Timothy Leary (1920-1996) made significant contributions to interpersonal theory, through his book “Interpersonal diagnosis of personality” (Leary 1957). Working at Berkeley from 1950, he was participating in a research group, “the Kaiser Project”, which did research on patient interactions in group psychotherapy. The results were presented in a series of articles (Coffey et al., 1950; LaForge et al., 1954; LaForge, Suczek, 1955; Leary, Coffey 1955; Wiggins, 1996; Kiesler, 1996; Pincus, Gurtman, 2006). The first presentation of interpersonal mechanisms on a circular continuum, observed in group psychotherapy patients, was made by Freedman, Leary, Ossorio, & Coffey (1951). The capitals from A to P, designating the 16 different interpersonal “mechanisms”, are still to be found in the present octant versions of the interpersonal circle, as PA, BC, DE etc.

The results from the Kaiser Project were summarized and expanded by Leary (1957). He proposed that interpersonal behavior and traits may be arranged within a (Cartesian) circle, with the basic coordinates (along the horizontal (x-)axis) of affiliation, corresponding to Sullivan’s concept of security regarding love, and dominance (along the vertical (y-)axis), corresponding to Sullivan’s concept of self-esteem (Horowitz et al. 2000). A range of terms have been used to refer to the axes of the interpersonal circle. Most interpersonal theoreticians now seem to agree on the terms communion and agency, with reference to the metaconcepts introduced by Bakan (1966). Communion refers to the self as a part of a community, geared toward closeness, affection and cooperation. Agency refers to the pursuit of independence and autonomy, and aims at control and assertiveness. Bakan contended that a key issue for understanding human existence is to comprehend how the tensions of this duality: “getting along” and “getting ahead” (Hogan, Roberts, 2000), are managed (Wiggins, 1991, 2003; Wiggins, Trobst, 1997; Horowitz et al., 2006; Pincus, Gurtman, 2006).

Leary et al.’s proposals inspired many later investigators of the interpersonal domain and dimensions describing interpersonal styles and problems. The term “circumplex” was proposed by Guttman (1954), to signify a system of variables with a circular law of order (Guttman, 1954). Wiggins, who developed the Interpersonal Adjective Scale (IAS), was the first to apply the concept of interpersonal circumplex, merging the seminal work of the Kaiser Project with the
A more detailed description of the assumptions underlying the circumplex model can be found in the Methods section (8.2.2 - p. 24).

6.3 The Inventory of Interpersonal problems.

While the IAS was intended to measure normal variations of personality, the Inventory of Interpersonal Problems was constructed to assess aspects of interpersonal distress or difficulties. According to Horowitz et al. (2000) the development of IIP originated in an intensive case study of a woman in psychoanalysis (Horowitz et al., 1978). All verbal statements concerning interpersonal matters, either «I can’t [do something] » or «I can’t stop [doing something] » were registered. The problems seemed to circle around two main themes: intimacy and assertiveness. A lot of subsequent qualitative and quantitative research and validation work resulted in the 127 items Inventory of Interpersonal Problems (Horowitz, French, 1979; Horowitz, Weckler & Doren, 1983; Horowitz et al., 2000). Horowitz et al. (1988) concluded that the two higher order factors of the IIP matched the two interpersonal dimensions postulated by earlier interpersonal theorists (Wiggins, 1979; Kiesler, 1983). They proposed that the IIP might be interpretable as a “problems” version of the interpersonal circumplex. Elaborating on this, Alden, Wiggins and Pincus (1990) located the 127 items in the interpersonal space, then divided the two-dimensional space into eight octants, and identified the eight items that were most representative for each octant. They named the instrument IIP-C, emphasizing its circumplex structure (Alden, Wiggins & Pincus, 1990). Horowitz et al. (2000) chose to call the same instrument IIP-64, reflecting its 64 items. I have chosen to use the latter designation in this thesis, and I have also named the IIP-64 octants according to Horowitz et al. (2000), mainly utilizing the “short versions”, i.e. “Domineering” instead of “Domineering/Controlling”, “Vindictive” instead of “Vindictive/Self-Centered”, and “Intrusive” instead of “Intrusive/Needy”(Horowitz et al., 2000). Cf. Figure 1. As mentioned above, the capitals PA, BC etc. stem from an earlier 16-segment version of the interpersonal circle, still conventionally used (Leary, 1957). This allows for rapid communication across specific IPC measures. The IIP-64 has been used extensively in research on psychopathology and psychotherapy (e.g. Ruiz et al., 2004; Salzer et al., 2011).
6.4 IIP-64 and psychopathology

Interpersonal problems are closely related to the psychopathologies of personality. A person with a personality disorder (PD) is often enacting maladaptive interpersonal patterns. Most of the personality disorders described in ICD-10 and DSM-IV might be understood as manifestations of salient interpersonal motives (Horowitz, 2004; Horowitz et al., 2006). Even if the person experiences his/her maladaptive relational pattern as painful, the defensive effort to avoid anxiety and maintain an acceptable self-image, might lead to repetitions of this pattern. For instance, a
person with an avoidant PD, will have a fearsome, self-effacing interpersonal style, that easily obstructs the acceptance and closeness in relation to others that he/she usually longs for.

Horowitz et al. (2006) maintains that if interpersonal motives are important elements of personality disorders, one might locate the PDs within the two-dimensional space of the interpersonal circumplex, defined by the two dimensions of communion and agency (Horowitz et al. 2006). Several researchers have examined the relationship between interpersonal problems and personality disorders (Pincus, Wiggins, 1990; Soldz et al.,1993; Matano, Locke, 1995; Monsen et al., 2006; Pincus, Gurtman 2006). Clear associations to specific parts of the interpersonal circle are found, regarding histrionic, narcissistic, paranoid, schizoid, avoidant, and dependent PD (Figure 2).

Wagner et al. (1999) summarize the results, contending that people with histrionic PD exhibit interpersonal features corresponding to the upper right quadrant of the IPC, reflecting an interpersonal motive of wanting to influence others to become connected. Persons with paranoid PD are likely to be found in the upper left quadrant of the IPC, reflecting a wish to influence others to “leave me alone”. Schizoid and avoidant PD, often found to be located in the lower left quadrant, i.e. low on both the communion and the agency dimensions, would be indicating a motive of self-protection by being passive and detached. Persons with dependent PD are high in communion and low in agency, i.e. to be found in the lower right quadrant of the IPC, indicating a wish to let others take charge. Borderline PD, with its many instabilities, does not seem to occupy any specific location in two-dimensional interpersonal space (Watson, Sinha, 1998; Wagner et al., 1999; Horowitz et al. 2006).

Figure 2. Location of personality disorders in the interpersonal circle
Horowitz et al. (2006) claim that, since PD’s tend to co-occur, their location in interpersonal space might indicate which PD’s are most apt to co-occur. Those that are close, and likely to reflect similar interpersonal motives, should be expected to co-occur more often than those far apart. Supporting this, histrionic and narcissistic PDs have been found to have a comorbidity of 30%, while histrionic and avoidant PD had a comorbidity of 0% (Watson, Sinha, 1998; Horowitz et al., 2006).

6.4.1 Interpersonal problems and symptoms

Although it is well documented that, in general, symptoms and interpersonal problems are strongly correlated, the specific relationship between subtypes of interpersonal problems and more circumscribed symptom disorders and syndromes is far less obvious (Horowitz et al., 1988; Horowitz et al. 2000). Broad symptom categories, like depression or general anxiety, probably correspond more with the general interpersonal problem factor than more circumscribed ones, like hostility or paranoid ideation, which are likely to be characterized by more interpersonal specificity. Horowitz (2004) notes that “…the very same syndrome may develop for different reasons in different people; for example, in one person it may arise from a frustrated communal motive and in another from a frustrated agentic motive. As a result, two people who are equally depressed may have become depressed for quite different reasons” (Horowitz, 2004, p. 149). The
research seem to indicate that symptom disorders like general anxiety disorder and depressive disorder might be associated with several predominant interpersonal problems, reflecting what is called interpersonal pathoplasticity, i.e. a mutually influencing but non-etiological relationship between psychopathology and the interpersonal system (Borkovec et al., 2002; Crits Christoph et al., 2005, Salzer et al. 2008; Widiger, Smith, 2008; Przeworski et al., 2011; Salzer et al., 2011; Cain et al., 2012). In this thesis we have used the Symptom Check List – 90 items-revised version (SCL-90-R) as an indicator of symptom distress (Derogatis, 1983). By inspection of the SCL subscale items, it seems that the items of subscales like Hostility and Paranoid Ideation (“Getting into frequent arguments” (74), “Feeling that you are watched or talked about by others” (43)), have interpersonal connotations that invite to hypotheses of their “location” in interpersonal space. On the other hand, items of subscales like Somatization («Pains in lower back» (27), «Feeling weak in parts of your body» (56)) seem to be less clearly related to an interpersonal context. Identifying which symptoms and symptom clusters that seem generally interpersonal in nature and which are more interpersonally specific, may be valuable in the quest for a more detailed understanding of the relationship between psychopathology and different forms of interpersonal relatedness. We investigated these issues by examining the validity of theoretically (as well as common sense) derived hypotheses about associations between interpersonal relatedness and self-reported symptom types.

6.4.2 Interpersonal problems and self-image.

A central assumption in interpersonal theory is that people tend to treat themselves as they have been treated by others. For instance, persistent criticism from significant others is likely to foster self-criticism. Internalized self-criticism might, however, manifest itself in different ways in the interpersonal domain (Pincus, Gurtman, & Ruiz 1998; Horowitz, 2004). In the literature there is a general agreement that problems in self-relatedness and problems in the interpersonal domain are strongly correlated on the global level, and that both are robustly related to measures of psychopathology. However, few studies have analysed specific associations between interpersonal problems/styles and specific types of problems of relating to the self (Pincus, Gurtman, & Ruiz 1998; Ruiz et al., 2004; Monsen et al., 2007)

The concept of self image in interpersonal theory has been operationalized in the Structural Analysis of Social Behavior (SASB) – introject. The SASB model, not unlike the IIP, is based on
interpersonal/object relational tradition (Mahler, Pine, & Bergman, 1975; Sullivan, 1953) and the tradition of interpersonal circumplex models (Benjamin, 1996; Leary, 1957). The original SASB model is more complex than other two-dimensional circumplex models in that it includes three surfaces: 1) interpersonal focus on others, or my actions toward others (transitive, “parent-like,” action); 2) interpersonal focus on the self, or my reactions to others’ actions against me (intransitive, “infant-like,” action); and 3) introjected actions directed toward myself (Benjamin, 1974, 1982, 1984, 1987). The third surface, the “introject,” reflects a hypothesized personality structure of a relatively stable repertoire of actions and attitudes toward oneself, assumed to be formed by interpersonal experiences that are internalized early in life (Benjamin, 1996). It is also hypothesized to play a central role in recurrent maladaptive relationship patterns that underlie symptomatic representations and in maintaining problematic affective-interpersonal cycles (Henry Schacht & Strupp, 1990).

Each surface is defined by dimensions of Affiliation and Interdependence. The SASB Introject surface includes eight clusters that are positioned in a circular arrangement, representing combinations of the Affiliation and Interdependence dimensions (cf. Figure 3). The Affiliation dimension corresponds to the Communion (warm-cold) dimension of the IIP. The Interdependence dimension (earlier named the Autonomy dimension) has proved to be more conceptually unclear. The operationalization of this dimension has not showed the expected significant correlations with other measures (Gurtman & Pincus, 2003; Halvorsen & Monsen, 2007). See Figure 3.

Several studies have indicated a strong relationship between the Affiliation dimension of SASB introject and psychopathology. The relationship between the Interdependence dimension and psychopathology is less examined, partially due to lower reliability on some of the Interdependence clusters, especially cluster 1(Monsen et al., 2007). Due to the conceptual and reliability problems with the Interdependence dimension, we focus mainly on the Affiliation dimension of SASB introject, and this dimension’s associations with different forms of interpersonal problems.

Some studies have indicated that the two components of the Affiliation dimension, Self-Acceptance and Self-Hostility (see Figure 3) display separate characteristics, for instance different patterns of change during therapy (Granberg, Armelius, 2003; Halvorsen, 2006). We, therefore, divided the Affiliation into its two subcomponents in order to examine if Self-Acceptance and
Self-Hostility show different associations with interpersonal problems. One of the aims was to test the findings of Pincus et al. (1998), which indicated an association between high agency/domineering forms of interpersonal problems and relatively positive forms of self-relatedness, as measured with high scores on the Affiliation axis of the SASB Introject.

Figure 3. The SASB introject circle. Eight subscales (clusters) denoting different forms of self-relatedness. Two dimensions: Affiliation and Interdependence. Two aspects of the Affiliation dimension: Self-Acceptance and Self-Hostility.

7 AIMS OF THE THESIS

There has been fairly extensive research on interpersonal problems, as measured with the IIP-64, including a number of validation studies, along with clinical process and outcome studies. Many of the studies have used student samples. Furthermore, the existing clinical studies have
commonly been based on relatively small samples. Also, very few studies have systematically examined the role of specific interpersonal problem subtypes and utilized the structural summary method (see the Methods section), with its potentials for differentiation between subgroups, for outcome prediction, and for examination of convergent and discriminant validity etc. (Haslam, Gurtman, 1999; Ruiz et al., 2004; Slaney et al., 2006; Wright et al., 2009; Gurtman, Lee, 2009; Przeworski et al., 2011; Salzer et al., 2011; Cain et al., 2012). Thus, reading the relevant literature, there appears to be a marked need for large scale studies examining the extent and nature of interpersonal problems among psychiatric patients. The theoretically pertinent role and importance of interpersonal problems for mental health and functioning have previously not been sufficiently investigated in such samples. Furthermore, there is a need for applying the full potentials of the IIP-64 assessment system in order to systematically examine variation in overall levels, specific types, and intensity of relational problems among psychiatric patients, along with theoretically informed investigations into the interrelationships between these facets of interpersonal functioning and other domains of mental health in this population.

Accordingly, the main purpose of this thesis is to address these issues and thus broaden our knowledge, applying data from a large general psychiatric outpatient sample, with regard to interpersonal problems, symptoms and self-relatedness, by utilizing the method of structural summary of IIP-64 profiles to analyse self-reports from a clinical sample unparalleled in size. This method offers an overall measure of interpersonal problems, as well as direction and intensity of the dominant problem. The direction of the interpersonal problems was used for attributing each patient’s interpersonal profile to one of eight groups (octant groups), indicating the patient’s predominant interpersonal theme (Gurtman & Balakrishnan, 1998). We applied the interpersonal octant groups as independent variables, to test hypotheses regarding their associations with psychiatric symptoms and forms of self-relatedness. The reason for focusing on associations between interpersonal problems and these two particular measurement domains was their central position in psychotherapy theory and research. Psychiatric symptoms, self-relatedness, and interpersonal problems are three of the domains most commonly assessed in psychotherapy outcome research. The empirical interrelatedness of these domains is therefore a topic of great principal and potentially practical importance, and studies in this area have been limited and inconclusive.

The present thesis is, to our knowledge, the first in the field to undertake assessments of all three of these domains concurrently in one large clinical sample and utilize the structural summary
method for examining the extent, type, and intensity of interpersonal problems combined with investigation into the interrelationships between structural summary based indicators of interpersonal problems and psychiatric symptoms on the one hand and forms of self-relatedness on the other. The thesis can thereby contribute to the existing literature by adding more statistical power than any previous study in the field, along with utilizing state of the art methodology commonly not employed. It must be emphasized of course that the thesis is based on analyses that are purely correlational in nature and that causal interpretations about relationships between interpersonal problems, symptoms, and self-relatedness cannot be made on the basis of the data presented herein. Still, these three domains of psychological functioning are highly central to the understanding of psychopathology, and we believe that a thorough understanding of how they co-vary and relate to each other may be a highly valuable contribution to the field.

Specifically, the thesis has the following three objectives:

Aim 1: To map the occurrence of different forms of interpersonal problems (IIP-64) in a large psychiatric outpatient sample. What characterizes the sample with regard to overall levels of interpersonal problems, as well as type and intensity of predominant interpersonal themes? (Article I).

Aim 2: To test the hypothesis that general level of interpersonal distress is strongly related to major types of psychiatric symptoms. Additionally, we wanted to test hypotheses regarding specific relationships between three interpersonal octants (Vindictive, Cold and Socially Inhibited) and four types of symptoms as operationalized by the SCL-90-R (Hostility, Paranoid Ideation, Psychoticism, and Phobic Anxiety). Based on inspection of their respective content domains, these four symptom types appear to be of a more specifically relational kind (see Article II for a more detailed description of these hypotheses) than other common psychiatric symptoms (e.g., Somatization, Obsessive–Compulsive, Depression, Anxiety). We did not expect to find specific relationships between interpersonal octants and the remaining five symptom clusters of SCL-90-R, since for these symptom types there are no clear conceptual reasons for hypothesizing specific relationships with interpersonal problems. (Article II)

Aim 3: To test if the clinical sample has more negative forms of self-relatedness than people in general. Additionally, we wanted to test the claim that positive forms of self-relatedness not necessarily run parallel to positive forms of relating to others. Since a number of studies have indicated that using overall scores on the affiliation dimension from the SASB may mask
important variability, the two components of the Affiliation dimension, Self-Acceptance and Self-Hostility (see Figure 3 – p.19) were studied separately. We were thus able to test the assumption that they represent separate features of self-relatedness. (Article III).

8 METHODS

8.1 Participants

Outpatient sample. The clinic covers a population of 60 000 persons. Patients included in the study were consecutively admitted patients that were offered examination/treatment for the first time at the outpatient psychiatric clinic in Moss, Norway. Exclusion criteria: Emergency cases, non-Norwegian-speaking patients and patients that already, or earlier had been offered/given treatment at the clinic. Previously registered patients (~25 %), emergency cases (~25 %) and non-Norwegian-speaking patients (~10 %) were the largest groups among those not included in the study. Between 5 - 10 % were excluded for various reasons, mainly requests for ADHD evaluations. Patients approached were sent a booklet, and asked to fill in a number of self-report-instruments, among others, the IIP-64, SCL-90-R and SASB-introject, before the first consultation at the clinic. Exact figures for the total number of patients admitted in the period are lacking, but spot checks indicated approximately 4000 admissions. The exact number of patients approached is also unknown, but again spot-checks indicated that between 1200 and 1300 patients were included. The 988 patients providing the requested data indicate a response rate of around 79%. See Figure 4.

Figure 4. Flow chart indicating the relationship between the total number of patients admitted and patients finally included in the study.
The mean age of the sample was 35 years, range from 16 to 77 years. Women comprised 64%. The Regional Committee for Medical Research Ethics for Eastern Norway approved the protocol for the study.

*Normal reference sample.* A Norwegian normal reference sample was used. Three hundred and two persons completed a battery of self-report measures, including the IIP-64, SCL-90-R and SASB Introject. Half of this sample comprised undergraduate psychology students and the other half were employees recruited from large companies among relatives and acquaintances of the psychology students. Mean age in the reference sample was 33 (range: 18-65) and female respondents comprised 60% (Monsen et al., 1999).

### 8.2 Inventory of Interpersonal Problems – 64 item version.

The self-report Inventory of Interpersonal Problems, 64 items version (IIP-64) consists of 39 items beginning with the phrase: “It is hard for me to ….” and the remaining 25 items describe “Things that you do too much”. Each item is rated on a 5 point Likert scale, ranging from 0 (not at all) to 4 (extremely). The inventory is tapping eight specific interpersonal styles or problems,
based on their angular location in the two-dimensional circumplex space (Horowitz et al., 2000) Figure 1). Starting from the dominant pole of the Agency dimension and moving counter clockwise, the octants and the corresponding scales are: Domineering/Controlling (PA), Vindictive/Self-Centered (BC), Cold/Distant (DE), Socially Inhibited (FG), Nonassertive (HI), Overly Accommodating (JK), Self-Sacrificing (LM) and Intrusive/Needy (NO). (There is a comment regarding the capitals in section 6.2 (p. 12) and in section 6.3 (p. 13).) The most common way of presenting the type and extent of interpersonal problems, based on IIP-64, has been to list global and subscale scores for patients or groups. In this study, applying the structural summary method, each patient’s interpersonal profile, including predominant interpersonal theme and intensity of the problems, is assessed. This permits more detailed individual and group profile analyses.

8.2.1 Reliability of IIP-64

Several studies have estimated Cronbach’s alpha (Cronbach, 1951) for the IIP-64 scales in the range .72 – .85 (Alden, Wiggins, & Pincus, 1990; Kunst, Hoyer, 2003; Weinryb et al., 1996; Vittengl, Clark, & Jarrett, 2003), and test-retest correlations in the range of .56 – .83 (Horowitz et al., 2000). Examination of the Norwegian version of IIP-64 (Monsen et al., 1999) displayed alphas from .71 to .83 in the reference sample and .69 – .87 in the patient sample (the intrusive subscale were lowest in both) (Monsen et al., 2006). Alphas for the IIP-sub-scales in the present study were from .64 to .84, median .77 (Bjerke et al., 2011).

8.2.2 Validity of IIP-64

In general, a circular model for the interpersonal domain presupposes a two-dimensional structure, i.e. differences between interpersonal variables may meaningfully be reduced to differences along two fundamental dimensions (the Cartesian assumption). Next, this assumption must be equally relevant for all interpersonal variables (the assumption of equal communality). Third, since circles are continuous curves, it must be possible to identify/formulate a meaningful interpersonal problem on every point of the circle (the assumption of continuity) (Gurtman & Pincus, 2003).

Factor analyses have shown that IIP-64 have a strong general factor, interpreted as a general complaint dimension (Tracey, Rounds, & Gurtman, 1996). After accounting for this general distress factor, the circumplex structure with orthogonal dimensions, interpreted as communion
The Norwegian version of IIP-64 displays good internal structure and discriminant and convergent validity with external criteria. The construct validity was acceptable. The external validity results examining personality disorder correlates of the IIP-64 generally conformed to predictions, providing direct evidence for agreement between self-report and expert judgments of interpersonal problems (Monsen et al., 2006).

8.2.3 IIP – Standardization and Short versions

There are several ways of presenting IIP-data, e.g. raw scores, different forms of standardized scores (normed scores, T-scores), ipsatized scores and stanines. In this thesis, normed scores are utilized, i.e. that scores are standardized in relation to the Norwegian reference sample (Monsen et al., 1999). This implies that a normed score of 1,0 means a score that is one standard deviation above the reference score.

Example – IIP-subscale scores:

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Raw</th>
<th>Reference</th>
<th>Normed</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>1,28</td>
<td>0,78 (0,55)</td>
<td>0,91</td>
</tr>
<tr>
<td>BC</td>
<td>1,42</td>
<td>0,72 (0,54)</td>
<td>1,30</td>
</tr>
<tr>
<td>DE</td>
<td>1,34</td>
<td>0,73 (0,59)</td>
<td>1,03</td>
</tr>
<tr>
<td>FG</td>
<td>1,49</td>
<td>0,95 (0,69)</td>
<td>0,78</td>
</tr>
<tr>
<td>HI</td>
<td>1,58</td>
<td>1,09 (0,70)</td>
<td>0,70</td>
</tr>
<tr>
<td>JK</td>
<td>1,85</td>
<td>1,37 (0,66)</td>
<td>0,73</td>
</tr>
<tr>
<td>LM</td>
<td>1,63</td>
<td>1,16 (0,59)</td>
<td>0,80</td>
</tr>
<tr>
<td>NO</td>
<td>1,33</td>
<td>0,93 (0,58)</td>
<td>0,69</td>
</tr>
</tbody>
</table>

It is noteworthy that what would seem, on basis of the raw scores, like a profile peaking in the Overly Accomodating (JK) area of the IPC, after “norming” (i.e. compared to the Norwegian norm) peaks in the opposite, Vindictive (BC) area. The BC subscale score is 1,30 standard deviations above the Norwegian reference, while the JK score is “only” 0,73 SD above the norm. (See example in Appendix – p. 57-61).

Several short versions of the original IIP-127, in addition to the IIP-64, have been launched, mainly based on factor analyses (Barkham, Hardy, & Startup, 1994; Barkham, Hardy, & Startup 1996; Hughes, Barkham, 2005). This implies, in addition to a reduced number of items utilized,
also different arrangements of items in factors and clusters (Barkham, Hardy, & Startup, 1994; Barkham, Hardy, & Startup, 1996; Gude et al., 2000; Pedersen, 2002). The IIP-64 now seems to be the most common version, which was applied in the Norwegian multisite study (NMSPOP) and, accordingly, in this thesis (cf. Preface section - p. 8).

8.2.4 How to organize the IIP-64 data? Structural summary of IIP-64.

Two ways of presenting and summarizing IIP-64-data both derive from its circular properties. A circular profile plot, which Wiggins et al. (1989, p. 300) referred to as “the interpersonal spaceship”, may be visually appealing and facilitate interpretation. See Figure 5.

*Figure 5.* “Interpersonal spaceship”. Normed subscale scores from the example above.

For research purposes it is often convenient to depict data in a rectangular diagram (Gurtman, 1994). In this way, the circular distribution of scores appears as a cosine-like curve. Figure 6 illustrates the example above in a rectangular diagram.

(Gurtman, 1994; Gurtman, Balakrishnan, 1998; Pincus, Gurtman, 2003; Gurtman, Pincus, 2003; Pincus, Gurtman, 2006)
Figure 6. Rectangular presentation of the example in Figure 5.

However, this method is less likely to be instructive when the profile is less “prototypic”, and more jagged or sprawling. The other method is based on the notion that scores on a circular measure are vectors with a magnitude and direction. The possibility of representing interpersonal tendencies with reference to the geometric properties of a circle is one of the interesting potentialities of the interpersonal circle (Wiggins et al., 1989; Gurtman, 2011). A profile might be reduced to a summary point in the two-dimensional interpersonal space, and a vector from the origin to this point, will indicate the overall trend of the profile (but not the amount of interpersonal problems in general, if the problems are evenly distributed around the interpersonal circle). The present study applied an approach which is a mixture of the other two, namely the method of structural analysis and summary of interpersonal profiles introduced by Gurtman et al. (Gurtman & Balakrishnan, 1998). This method takes into account several IIP-profile features, i.e. both total amount of interpersonal problems as well as direction and intensity of the problems, and profile prototypicity. The method implies the construction (in a rectangular presentation) of a cosine curve that fits best with the actual subscale scores, i.e. the “best fit” curve. Figure 7 illustrates the best fit curve for the example above.
The normed IIP-64 subscale scores are summarized, via Cartesian coordinate and vector arithmetics, as well as trigonometric calculations, into four parameters:

1) The mean level of interpersonal distress (elevation; the global mean score; IIP Global). This is calculated by summing the normed subscale scores and dividing by eight.

2) The type of predominant interpersonal problem, indicated by the location of the individual’s profile peak in the interpersonal space, (technically termed angle or angular displacement). The angle is calculated on basis of trigonometry. (See Appendix – p. 58).

3) Intensity (amplitude) of predominant interpersonal problem.

Figure 8 illustrates the first three parameters for the example above.
4) A goodness of fit (GOF) index (between 0 and 1), reflecting degree of fit between the actual and the best fit profile (see Figure 7). This variable was included in the first article, where we concluded that the interpersonal problems profile for each of the octant groups was sufficiently prototypic to be meaningfully described by the other three IIP-parameters (i.e. IIP Global, Angle and Intensity). In other words: most profiles seem to have one predominant interpersonal theme, rather than several such themes; the latter would have been reflected in more complex profiles and lower GOF. The goodness of fit index was not included in article two and three.

The interpersonal variables have undergone some, perhaps confusing, name changes during the writing process. Even if the synonymous names of the variables often are marked within parentheses, and the intention was to apply less “technical” terms, it is regrettable if it makes the structural summary method look even more complicated than it is. Thus, the concept of "Elevation" in the first article has ended up with “IIP Global” in the third, via “Global mean” in the second article. Similarly, “Amplitude” in the first article was changed to “Intensity” in the second and third.

On the basis of calculations of each patient’s angle or profile peak, the clinical sample was divided into octant groups. Patient-profiles peaking, as the example above, with an angle of $45^\circ \pm 22.5^\circ$ (i.e. from $22.5^\circ$ to $67.5^\circ$) were allocated to the octant group intrusive (NO); profiles with an
angle of $90^\circ \pm 22.5^\circ$ to the octant group domineering (PA), and so on. The octant groups served as the main independent group variable in the study.

As we see from the example above, this patient would have been allocated to the Vindictive (BC) Octant group.

Cf. Appendix section for a more detailed description of the structural summary, and a computational example.

### 8.3 Other instruments

#### 8.3.1 Symptom Check List, 90 items, Revised (SCL-90-R).

SCL-90-R is the most commonly used self-report symptom inventory to measure psychological symptom patterns and patient progress during treatment (Derogatis, 1983; Bøgwald, 2002). The intensity of 90 symptoms during the last week is rated on a Likert scale from 0 to 4. The mean score of all 90 items, the global severity index (GSI) is most often reported (Bøgwald, 2002). Factor analyses have indicated nine subscales, each comprising 6-13 items, named Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, Psychoticism, and one additional group of items relating to eating and sleep disturbance. The Norwegian version of SCL-90-R has shown satisfying internal consistency on subscales (Vassend, Skrondal, 2003). The clinical sample under study in this thesis display Cronbach’s alphas for SCL-90-R subscales from .76 to .88, median .85 (Bjerke, Solbakken, & Monsen, 2014).

#### 8.3.2 Structural Analysis of Social Behavior, Introject surface (SASB-introject).

In the present study the Norwegian translation of the SASB Introject questionnaire was used (Monsen et al., 1999). It has 36 items that describe attitudes and feelings toward one self. The items are grouped in eight clusters that can be arranged in a circumplex within a two-
dimensional space defined by the dimensions Affiliation and Interdependence. By convention the
clusters are arranged clockwise, starting with cluster 1 at “twelve o’clock” (Cf. Figure 3 – p. 19).

Examination of the Norwegian version of SASB Introject questionnaire indicates fairly good
construct validity in clinical samples. Cronbach’s Alpha values (Cronbach, 1951) for the eight
clusters in the present study ranged from .39 (cluster 1 and 4) to .77, median .72. Only cluster 1
and 4 had alpha <.70.

8.4 Statistical analyses

Statistical analyses included descriptives, analyses of variance (ANOVA) and covariance
(ANCOVA), and General Linear Model analyses (GLMs; SPSS/PASW 17.0/18.0). The magnitude
of group differences are reported as effect sizes, either as Cohen’s d (small: 0.2, medium: 0.5,
large: 0.8) or partial eta squared (small: 0.01, medium: 0.06, large: 0.14) (Cohen, 1988). When
estimating contrasts between octant groups, Tukey’s or Bonferroni post hoc comparisons were
made.

The Structural summary variables were calculated via own SPSS syntaxes (See computational
example in the Appendix section).

9 RESULTS

9.1 Summary of paper I.

The aim of this study was to map and categorize self-reported interpersonal problems in a large
psychiatric outpatient sample. First-admission psychiatric patients completed IIP-64 before
treatment. The scores were then compared with Norwegian reference data. Profile characteristics
of eight subgroups of patients, corresponding to eight different forms of predominant
interpersonal problem (i.e., octant group assignment), were calculated according to the structural
summary method.

In general, and as expected, the patients reported considerably more interpersonal problems than
the normal reference sample. The patient groups most prevalent in the sample, characterized by a
Patients with different predominant interpersonal problems have characteristic ways of relating to others, which can be important to identify and address in therapy. Patients with a vindictive interpersonal style, for instance, might easily evoke countertransference reactions in the form of more or less subtle rejection. On the other hand, patients with a tendency to submit, i.e. the major part of the psychiatric outpatients, represent other therapeutic challenges, and may often result in protracted, stalemate therapies if not acknowledged and addressed.

9.2 Summary of paper II.

Associations between interpersonal problems and symptoms, assessed with IIP-64 and SCL-90-R, were examined in the same psychiatric outpatient sample, with interpersonal octant group as independent variable.

In general, strong associations between interpersonal problems and symptoms were found, i.e. patients who scored high on interpersonal problems in general also scored high on symptoms in general. In addition, patients with interpersonal problems in the cold/domineering quadrant of the IPC, i.e. the Domineering, Vindictive and Cold octant, all reported higher levels of Hostility than the low agency octant groups. Patients with interpersonal problems of the Vindictive kind also tended to report Paranoid Ideation symptoms, and patients with interpersonal problems of the Socially Inhibited kind tended to report symptoms of Phobic Anxiety.

Assessing specific combinations of interpersonal problems and symptoms might be useful in treatment planning and evaluation. For instance, Hostility combined with domineering/high agency interpersonal problems might call for other therapeutic approaches than Hostility combined with cold/low communion interpersonal problems.

9.3 Summary of paper III.

The goal of this study was to test, in the same psychiatric outpatient sample, hypothesized associations between interpersonal problems and self-relatedness. The interpersonal octant groups were applied as the independent group variable, and measures of self-relatedness as dependent
variables, i.e. Affiliation and its subcomponents Self-Hostility and Self-Acceptance from the SASB Introject.

The clinical sample exhibited overall greater difficulty with self-relatedness compared to the reference sample, especially in relation to warm/affiliative aspects.

We hypothesized strong associations between interpersonal problems and self-relatedness and, more specifically, that patients with domineering interpersonal problems would exhibit a more positive self-image than patients with more submissive features. Our results only partially supported this hypothesis. A relatively positive and Self-Accepting self-image appeared to be associated with both cold/domineering and warmer types of interpersonal problems. This finding may suggest different forms of positive Self-Acceptance; one reflecting parallelism between relations with oneself and relations with others (“I’m okay, you’re okay”), and another whereby more defensively motivated positive Self-Acceptance combines with a Domineering-Vindictive relation to others.

Dividing the self-relatedness variable into Self-Hostile and Self-Accepting components yielded a novel finding, i.e., interpersonal Octant Groups differed significantly in relation to Self-Acceptance but not with respect to Self-Hostility. The former component may be reflective of a more stable personality feature than the latter, thereby rendering Self-Acceptance less susceptible to change.

9.4 Summary of papers I-III.

The findings from the papers are summarized in Table 1. The table demonstrates the significant differences between patients with different forms of interpersonal problems, regarding amount and intensity of such problems, as well as symptoms of Hostility, Paranoid Ideation, and Phobic Anxiety, and the measures of self-relatedness. Cf. Table 1.
Table 1

Summary of findings: Statistically significant differences among interpersonal octant groups on interpersonal distress, symptoms, and self-relatedness, in a psychiatric outpatient sample (N=988).

<table>
<thead>
<tr>
<th>Octant group</th>
<th>IIP-64</th>
<th>SCL-90-R</th>
<th>SASB Introj</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>Global Intens</td>
<td>HOS PAR PHO</td>
</tr>
<tr>
<td>Domineering (PA)</td>
<td>6.5</td>
<td>↓</td>
<td>↑</td>
</tr>
<tr>
<td>Vindictive (BC)</td>
<td>10.5</td>
<td>↑ ↑</td>
<td>↑</td>
</tr>
<tr>
<td>Cold (DE)</td>
<td>11.0</td>
<td>↑</td>
<td>↓</td>
</tr>
<tr>
<td>Socially Inhibited (FG)</td>
<td>15.2</td>
<td>↑ ↑ ↓</td>
<td>↓ ↓ ↑ ↓</td>
</tr>
<tr>
<td>Nonassertive (HI)</td>
<td>23.8</td>
<td>↑ ↑ ↓</td>
<td>↓ ↓</td>
</tr>
<tr>
<td>Overly Accommodating (JK)</td>
<td>17.7</td>
<td>↑ ↑ ↓</td>
<td>↓ ↓</td>
</tr>
<tr>
<td>Self-Sacrificing (LM)</td>
<td>9.7</td>
<td>↓ ↓ ↓</td>
<td>↓ ↓ ↑</td>
</tr>
<tr>
<td>Intrusive (NO)</td>
<td>5.6</td>
<td>↓ ↓ ↓</td>
<td></td>
</tr>
</tbody>
</table>

Note. IIP-64: % = Per cent of total sample. Global = Global score; Intens = Intensity. Subscales of SCL-90-R: HOS = Hostility; PAR= Paranoid Ideation; PHO= Phobic Anxiety. SASB-Introj = SASB Introject.

Arrows pointing upwards indicate significantly higher octant scores than octants where arrows are pointing downwards.

* BC>FG

Patients within each octant group seem to exhibit characteristic combinations of interpersonal problems, type of symptoms and forms of self-relatedness. Patients with Nonassertive interpersonal problems, for instance, report both much interpersonal distress in general, as well as highly intensive problems of the Nonassertive kind. They report less Hostile and Paranoid Ideation symptoms, and lower scores on Affiliation, i.e. a poor self-image. On the other hand, patients within the Vindictive octant group display less global and intense interpersonal distress, but high scores on Hostility and Paranoid Ideation symptoms. In addition they tend to have a less poor self-image, reflected in relatively higher scores on the Self-Accepting component of Affiliation.

10 DISCUSSION

This thesis addresses aspects and forms of interpersonal problems in a large outpatient sample, and how eight different forms of interpersonal problems, named interpersonal octant groups, are associated with symptoms and self-relatedness.
10.1 Interpersonal problems among 988 Norwegian psychiatric outpatients. A study of pre-treatment self-reports.

The majority of the patients seemed to have most problems with low assertiveness. These patients reported the highest levels of interpersonal distress in general, and also with regard to intensity/distinctiveness.

Gurtman et al. (1998) suggested that specific combinations of profile patterning – for instance if patients within certain octant groups reported high levels of general interpersonal problems while low on intensity, or vice versa – might be clinically important. Patients with profiles indicating diffuse interpersonal distress without specific thematic focus might be expected to benefit less from targeted approaches to treatment, characteristic of many behavioural therapies, than patients reporting relational difficulties of a more specific type (Gurtman, Balakrishnan, 1998). As Table 1 indicates, we found no octant groups displaying high intensity combined with low general level of interpersonal problems, or vice versa. Patients within the Overly Accomodating octant group are closest to the former pattern, with high intensity of interpersonal problems, combined with an intermediate level of interpersonal problems in general. These patients might, accordingly, be expected to benefit from more targeted, short-time therapies. Patients within the Domineering group, exhibiting low intensity and an intermediate level of interpersonal problems in general, are closest to the opposite pattern, i.e. a more diffuse interpersonal distress. The supposition that these patients are less likely to benefit from targeted, short-time therapy than the Overly Accomodating is in accordance with previous findings (Maling, Gurtman, & Howard, 1995; Davies-Osterkamp, Strauss, & Schmitz, 1996; Gurtman, 1996).

One important question is whether the structural summary method might disguise individual profile complexities. Profiles might peak in two or more opposing directions while the structural summary will place the profile in one (in between) octant. The findings in article 1 indicate that the interpersonal problems profile for patients within each of the octant groups was sufficiently prototypic to be meaningfully described by the three parameters of global interpersonal problems, angle, and intensity. In other words, most profiles seem to have one predominant interpersonal theme, rather than several such themes; the latter would have been reflected in more complex profiles and lower GOF (See chapter 8.2.4. and Appendix). This finding is in accordance with earlier findings (Haslam, Gurtman, 1999).
Patients within the Nonassertive octant group, clearly largest in this sample, are characterized by high levels of general and distinct interpersonal stress. According to Locke (Locke 2000), one of the most characteristic interpersonal motives in this sector of the interpersonal domain would be: “It is important to me that I do what others want me to do”. The main theme is lack of self-confidence in relation to others, and difficulties confronting others (Locke, 2000). The most salient interpersonal motive for persons in the neighbouring Socially Inhibited octant group, again according to Locke (2000), would be: “It is important to me that I do not say something stupid”. The corresponding interpersonal behaviour is likely to be, even more than the Nonassertive, characterized by striving to minimize shame-inducing social contact. People with an Avoidant PD tend to fall into this sector of the interpersonal circle (Horowitz et al., 2000).

Regarding patients with interpersonal problems of the Overly Accommodating type, they are in the middle range, compared with patients within the other octants, with regard to interpersonal problems in general, and high on intensity. Their most salient interpersonal motive would be: “It is important to me that others approve of me”. Persons with a dependent PD tend to fall into this part of the interpersonal circle. As mentioned above, a number of studies have shown or suggested that individuals within this group are more likely to profit from short term therapy than those who fall into other parts of the interpersonal space (Maling, Gurtman, & Howard, 1995; Davies-Osterkamp, Strauss, & Schmitz, 1996; Gurtman, 1996; Gurtman, Balakrishnan, 1998). Patients in this group have a higher capacity, compared to the Nonassertive and, especially, the Socially Inhibited, to establish a good working alliance, which in turn is assumed to be an important element in successful, effective therapy (Horvath, Symonds, 1991; Hersoug, Monsen, Havik, & Hoglend, 2002; Hersoug, Hoglend, Havik, & Monsen, 2010; Hersoug, Hoglend, Gabbard, & Lorentsen, 2013).

The most salient interpersonal motive for patients within the Vindictive octant, also reporting interpersonal problems in the middle range, would be: “It is important to me to retaliate when attacked” (Locke, 2000). They are thought to offer special challenges in relation to therapeutic work because of their, often subtle, anger, mistrust and vindictiveness. Therapists might tend to dislike these patients, thereby unwillingly contributing to a poor working alliance and outcome (Lippe, Monsen, Ronnestad, & Eilertsen, 2008). They might be as much in need of psychiatric treatment as their more agreeable “opponents” on the warm/submissive side of the interpersonal circle, but run the risk of being rejected from therapy because of their hostile and self-centred interpersonal style.
10.2 Are there specific relationships between interpersonal problems and symptom patterns among psychiatric outpatients?

Article 2 in this thesis deals with the degree of specific vs. unspecific associations between subtypes of interpersonal problems and various symptoms, as measured with SCL-90-R. High correlations between the general level of interpersonal distress and all symptom subscales were expected, as well as specific associations between the three interpersonal octant groups characterised by low communion (i.e. Vindictive, Cold and Social Inhibited), and the four symptom clusters tapping Hostility, Paranoid Ideation, Psychoticism and Phobic Anxiety.

In general, patients reporting high levels of interpersonal problems reported high symptom distress as well. The general interpersonal distress factor, i.e. the global interpersonal problems seemed to account for most of the variance in symptoms. This finding strongly emphasizes the association between interpersonal problems and all kinds of symptoms, supporting the interpersonal conceptualisation of symptoms in general.

In addition, patients with interpersonal problems in the upper left quadrant of the IPC (Domineering, Vindictive and Cold) reported higher levels of Hostility. Patients within the Vindictive octant reported higher scores on Paranoid Ideation as well, and patients with interpersonal problems of the Socially Inhibited kind reported higher scores on Phobic Anxiety.

The association between Vindictive interpersonal problems and Paranoid Ideation concurs with previous studies placing Paranoid PD in the upper left quadrant of the interpersonal circumplex (Pincus, Wiggins, 1990; Wagner et al., 1999; Monsen et al., 2006; Horowitz et al., 2006). Also, there is fairly large conceptual correspondence between items measuring Paranoid Ideation and the items underlying interpersonal problems of Vindictiveness, making this finding expectable from a psychometric point of view. Patients with paranoid symptoms are more or less unable to protect the self from humiliation/shame. The distinct interpersonal location, high on agency and low on communion may well reflect a characteristic coping strategy serving to give a sense of self-security: complaining, confrontation, arguing, fighting back (Horowitz, 2004).

The association between interpersonal problems of the Socially Avoidant kind and symptoms of Phobic Anxiety is indirectly consistent with studies describing Avoidant PD in this IPC octant (Pincus, Wiggins, 1990; Wagner et al., 1999; Monsen et al., 2006; Horowitz et al., 2006). A central coping strategy among patients with Phobic Anxiety is avoidance, not only of the phobic
object, but of interpersonal difficulties in general. The combination of low communion and low agency also illustrate a phobic coping strategy of blaming the self and reaction to threat by passive withdrawing, while the paranoid person is more apt to blame others (high agency).

Contrary to our expectations, Psychoticism symptoms did not seem to be associated with specific interpersonal problems. Even though raw scores on Psychoticism were consistently higher in octants with problems of high agency/low communion as was expected, the differences from other octants did not reach statistical significance. It may be that a sample with greater variations in the prevalence of self-reported Psychoticism would unveil a relationship that was not possible to demonstrate in the current sample of outpatients.

Our results indicated theoretically interesting associations between the interpersonal problems a person might have and the most salient symptoms the person reports. One could claim that these results strengthen the validity of the IIP-64, as well as the SCL-90-R. They suggest a higher degree of specificity for at least some of the SCL-90-R subscales than previously assumed. Even if no causal inference can be made on this basis, it invites to reflections on the degree to which interpersonal style or problems might be a factor influencing the specific symptoms that a person develops, experiences, and reports (and vice versa).

10.3 Self-relatedness and interpersonal problems in a large psychiatric outpatient sample.

The clinical outpatient sample presented considerably more negative forms of self-relatedness than the normal reference sample.

We argued for splitting of the Affiliation dimension of the SASB Introject into its two subcomponents, Self-Acceptance and Self-Hostility, and to examine their relations to interpersonal problems. The results indicated that even if all the interpersonal variables contribute to the variance in Affiliation, they show quite different associations with the two components.

We found that two of the IIP variables (Octant Group and Intensity) did not contribute to the variance in Self-Hostility. Thus, the hypothesized association between the high Agency dimension of the IIP (i.e., domineering types of interpersonal problems) and a degree of accepting self-relatedness, applied to the Self-Accepting but not to the Self-Hostile component. Patients allocated to the two high Agency Octant Groups, Intrusive (NO) and Vindictive (BC), presented
significantly higher Self-Acceptance scores than patients in the Socially Inhibited (FG) Octant Group. On the other hand, a warm interpersonal style, Self-Sacrificing (LM) was associated with an accepting relationship with oneself, whereas a cold interpersonal style (DE) was associated with low Self-Acceptance. These findings may suggest different forms of positive Self-Acceptance, i.e., one reflecting parallelism between relations with oneself and relations with others (“I’m okay, you’re okay”) and another where more defensively motivated positive Self-Acceptance combines with a Domineering-Vindictive relation toward others. This is clinically interesting: a relatively Self-Accepting form of self-relatedness may be associated with relatively benign interpersonal problems of the warmer type but might also be defensively motivated and associated with more severe interpersonal problems of the cold/domineering type.

Awareness of the two components of Affiliation can have prognostic and therapeutic relevance. Previous studies have suggested that different self-image components exhibit dissimilar patterns of change as a result of psychotherapy (Granberg & Armelius, 2003; Halvorsen & Monsen, 2006; Halvorsen & Monsen, 2007; Junkert-Tress, Schnierda, Hartkamp, Schmitz, & Tress, 2001; Malmgren-Olsson, Armelius, & Armelius, 2001). Halvorsen and Monsen (2006) claimed that a change in Self-Hostility tendencies over long-term treatment is easier to achieve and occurs earlier in the treatment process than changes toward increased Self-Acceptance. Discarding Self-Hostile attitudes may promote optimism and pave the way for more fundamental changes in the realm of Self-Acceptance, which entails a more complex process that often requires a greater amount of time. These differences may be attributable to different underlying features of the two subcomponents of Affiliation. The Self-Hostile component is likely to be associated with negative affect (e.g., affect associated with anxiety and depression), which often improves rapidly with or without therapy. One might say that the Self-Hostile component displays more state-like features. Self-Acceptance, on the other hand, may be associated with more stable, trait-like beliefs, which likely require more extensive efforts to change. Thus, a reduced self-hostility seems to be something different from liking oneself better.

This study concerns associations between self-relatedness and interpersonal problems, but does not address the interesting questions of “what comes first”, how the interrelationship between relationship to self and to others influence each other, either in vicious circles or more benign, therapeutic manners. And: where to start in therapy? These are areas that should be systematically addressed in future research. For the individual patient and therapist, these may be important questions for their common efforts to make the patient better.
10.4. Overall summary of findings – Typical features of symptom formations and self-relatedness in patients from the eight octant groups

Patients within each of the interpersonal octant groups seem to display some typical features:

Patients in the (relatively small – 6.5%) Domineering group display a combination of relatively diffuse interpersonal problems and much anger. Persons with Narcissistic PD are likely to be found in this section of the IPC (see Figure 2, p. 16). These features might indicate problems with the establishment of an adequate working alliance.

Patients in the Vindictive octant group have a mixture of a cold and dominant interpersonal style, much anger and suspiciousness, and a seemingly positive, self-accepting self-image. Persons with Paranoid PD are likely to be found in this part of the IPC. As mentioned earlier, these patients might represent considerable countertransference challenges.

Patients with interpersonal problems of a predominantly Cold kind are not displaying noticeable features with regard to amount or intensity of interpersonal problems. We expected them to display significantly higher levels of Psychoticism (SCL-90-R), but our findings (Article 2) did not support this. However, they reported high levels of Hostility, and a poor self-image. The combination of relational guardedness and anger indicates challenges with regard to the working alliance.

Patients in the Socially Inhibited octant group appear to be the most troubled (reporting the highest levels of relational difficulties) among the psychiatric outpatients in the sample. The finding of pervasive problems among the Socially Inhibited is in accordance with earlier findings of high correlations between Socially Inhibited interpersonal problems and Avoidant personality disorder, a PD which seem to be of a more serious kind than previously assumed (Wilberg et al., 2009; Johansen et al., 2013; Eikenaes et al., 2013).

Patients in the Nonassertive octant group have several features in common with those in the Socially Inhibited group. Together they comprise almost 40% of the sample. Both groups reported high levels of interpersonal problems in general and high intensity of the problems in their designated octants. Both groups display relatively low levels of anger and mistrust, as well
as a poor relation to self. They seemed to differ with regard to phobic symptoms only, in that the Socially Inhibited group reported higher levels of Phobic Anxiety (Bjerke et al., 2011; Bjerke, Solbakken, & Monsen, 2014). Since persons with Avoidant PD also are likely to be found in this section of the IPC, they probably represent much of the same therapeutic challenges. The Nonassertive are less interpersonally reserved than the Socially Inhibited. According to Locke (2000) one of the most characteristic interpersonal motives for the Nonassertive is that it is important to do what others want one to do, while the most salient motive for the Socially Inhibited would be that it is important not to say something stupid. This might indicate that the Nonassertive perhaps will have a higher tendency do what he/she thinks that the therapist expect, while the Socially Inhibited will have a higher tendency for keeping the distance.

Patients with interpersonal problems of the Overly Accommodating type, had circumscribed interpersonal problems of the warm/submissive kind, combined with relatively low levels of anger and mistrust. As mentioned, patients in this group tend to profit from short term psychotherapy. Their interpersonal style might, however, invite to protracted therapies.

Patients within the Self-Sacrificing octant group seemed to have relatively few interpersonal problems in general (only about a half standard deviation above the normal), low on symptoms of anger and mistrust, and a relatively self-accepting self-image, indicating less psychopathology than the other octant groups.

Finally, patients in the Intrusive octant, the smallest (5,6%) group in the sample, are reporting relatively low levels of interpersonal problems, combined with a self-accepting self-image. This pattern might also indicate less psychopathology.

### 10.5 Limitations

In general, understanding the processes of psychiatric and psychological sickness and health is a complex task. These processes involve multiple domains of mental functioning, and conclusions based on the self-report instruments presented in this thesis must therefore be drawn with caution. The clinical sample presented is heterogenic. The overall trends detected in the analyses will clearly not characterize every patient in the sample. The interpersonal “lens” that is used in this thesis will make other perspectives less available, thus a host of psychological, biological, and
societal factors that likely are central to a comprehensive understanding are not considered in the thesis. Rather, its results must be seen as clarifying this circumscribed area and later research will hopefully lead to greater integration with other domains of the relevant knowledge field.

Although the self-report inventories applied in this study have been extensively validated and shown to relate to non-self-report criteria, there is a danger of overestimating the significance of the findings as long as we do not have other forms of assessment based on, for instance, clinical observation and/or psychobiological measures (Kazdin, 2003, p. 375).

Large subgroups of outpatients are excluded from the outset, first and foremost emergency cases, non-native speaking, and previously registered patients. It is possible that our finding of mainly low agency interpersonal problems would look different for acute and/or inpatient psychiatric samples. It is also possible that themes connected to submissiveness and helplessness are more socially acceptable, and therefore easier to give higher self-ratings for than the opposite, domineering, and the cold/vindictive themes associated with low communion.

It is possible that the process of norming the IIP-scores may overshadow the impact of problematic interpersonal distress. The fact that the Norwegian reference sample scores nearly twice as high on the Overly Accomodating (JK) (1.37; SD: 0.66) as on the Vindictive (0.72; SD: 0.54) subscale, implies a “down-scaling” of JK-problems and an “up-scaling” of BC-problems, cf. the example in the Methods section. Perhaps norming implies a risk for some patients to fall victim of a culturally determined Norwegian character trait: that we have a tendency for being Overly Accomodating?

The structural summary method implies that when placing a certain individual interpersonal profile in one specific octant group, high scores in adjacent (or more distant) parts of “circular space” might be obscured. It is also possible that a patient with high subscale scores on, for instance in the Intrusive and Vindictive domains of the IPC, while low on the (in-between) Domineering, nevertheless will fall into the Domineering octant group as a result of the structural summary calculation. This will to a certain degree be reflected in a less prototypic interpersonal problems profile, and a reduced goodness of fit index (GOF).

The structural summary method is regarded the most nuanced and statistically sound method of calculating and analysing scores from the IIP-64 by the experts in the field (Gurtman, 2011). Its utilization, we believe, is an important methodological strength of the thesis. Still, the structural
summary method is complex and may be hard to get to grips with for fellow researchers in the field less specialised in interpersonal theory. Thus, the utilization of the structural summary method may paradoxically complicate the process of communicating research results effectively to the research community.

The statistical analyses employed in the three articles of the present thesis are the ones commonly recommended for IIP-data. However, there may be alternative strategies for statistical analyses that could have been chosen. For example, in Articles 2 and 3, structural equation modelling (SEM) could have produced results with less unexplained error variance thereby increasing the reliability of estimates and possibly producing some adjustments to the results (MacCallum & Austin, 2000). However, we would expect the impact of such adjustments of the statistical analyses to be minimal.

One central limitation, stemming from the design of the research project the thesis is based on, is the fact that all data comes from one single time-point. Thus analyses investigating the relationships between different factors are only correlational in nature. It therefore must be stressed that no causal inferences can be made about the inter-relationships between interpersonal problems, self-relatedness and symptoms. Rather the study can demonstrate that at a given point in time these three factors appear to co-vary in conceptually meaningful ways, and generally in line with theoretically derived expectations. Future research would do well to examine how changes in these factors impact upon each other using methodological designs that are capable of identifying possible causal processes in this conceptual landscape.

Since SCL-90-R symptoms are not synonymous with Axis I-symptoms, diagnostic inferences about DSM-IV symptom disorders (American Psychiatric Association (APA), 1994) based on SCL-90-R should be conducted with care. For instance, the Anxiety and Depression subscales of SCL-90-R have rather unspecific associations with the corresponding axis I diagnoses, while Hostility, Paranoid Ideation and Psychoticism address complaints that perhaps are better represented by axis II disorders (Karterud et al., 1995; Pedersen, Karterud, 2004).

Regarding the SASB Introject, we focused on the Affiliation dimension and omitted the Interdependence dimension from our analyses. A more comprehensive utilization of the SASB Introject and study of its associations with the IIP should be pursued in further research.
11 THEORETICAL IMPLICATIONS

There are important and interesting theoretical implications of the present findings. First, there seems to be fairly specific relationships between the types of interpersonal problems a patient reports, the typical symptoms he or she experiences, and the way he or she relates to the self. Thus, knowledge of one or more of these domains can give rise to informed hypotheses about the other domains. Essentially, it seems that the scores on the major problem dimensions of interpersonal space correspond systematically to certain types of psychiatric symptoms. These symptoms may thus be thought of as interpersonally specific. On the other hand, previous research has demonstrated that there are also symptom types that appear interpersonally non-specific, i.e., they may be thought of as examples of interpersonal pathoplasticity (identical or similar symptoms may result from a number of interpersonal configurations). The finding of interpersonal specificity for symptoms of Hostility, Phobic Anxiety, and Paranoid Ideation is a novel one and, we believe, an important contribution to the literature. The finding may indicate that the main dimensions of Communion and Agency can be central also as underlying organizers of at least some common psychiatric symptoms. This would be an interesting avenue for future studies of the interrelationships between various symptom types.

The fact that some forms of symptoms are more strongly associated with specific types of interpersonal problems is, as far as we know, a novel finding in the literature. That it ought to be so is clear from a theoretical point of view. Empirical demonstration of this assumption, however, has not been done until now. One implication of this is that future theory-building and research in interpersonal psychology probably should routinely include not only the perspective of interpersonal pathoplasticity (which is common in recent times), but also the perspective of interpersonal specificity (which is not). Identifying more extensively which of the relevant phenomena that are more characterized by interpersonal pathoplasticity and which are more characterized by interpersonal specificity would be an important contribution to the field.

When it comes to the relationship between interpersonal problems and self-relatedness, our findings indicate that the empirically robust and well-validated dimensions of the IIP system correspond only partly to the dimensions of the SASB. Specifically, there appears to be a tendency for both high communion and high agency subgroups to display more self-accepting ways of relating to the self. This, in turn, indicates that there is less systematic differentiation of scores in the SASB than in the IIP-64. This notion is in line with previous studies in which the
interdependence dimension of the SASB appears less reliable and consequently less related to a number of external indicators of mental health than the affiliation dimension (e.g. Monsen et al., 2007).

One central implication of the complex relationship we found between interpersonal problems and self-relatedness, is that the traditional notion positing that the dimensions of the IIP-64 and the SASB introject surface correspond fairly directly to each other should be reconsidered. Rather it appears that while the communion dimension of interpersonal space are relatively consistent with the affiliation axis of the SASB introject, the agency and interdependence dimensions are less consistent with each other. Future research should examine more specifically how the agency and interdependence dimensions are related.

On a general note, as expected, there was a clear tendency for robust associations between interpersonal problems, symptoms, and problems in self-relatedness on the level of global scores. This is consistent with the notion of a general psychological problem factor that cuts across most, if not all domains of psychological functioning. On the subscale level associations are far more varied, some being significant, others non-significant. The pattern of associations that were found on the subscale level appears to provide support not only for the conceptual validity of the interpersonal model, but for the symptom subscales of the SCL-90-R, and to a certain extent for the SASB as well. Basically, the pattern of correlations we found indicate what is commonly denoted sound convergent and discriminant validity (that a phenomenon empirically is robustly associated with what it theoretically should be associated with, and uncorrelated or weakly correlated with what it theoretically should not be associated with). From this point of view, e.g. our finding of non-significant associations between (from a theoretical perspective) interpersonally non-specific symptoms give just as much sense as the significant associations that were demonstrated for theoretically speaking more interpersonally specific symptoms. Generally, the associations we found were reasonable and expectable for a theoretical vantage point.

12 CLINICAL IMPLICATIONS

Pre-treatment assessments, based on self-reports, on interpersonal problems, self-relatedness and symptoms may help guide effective diagnosis, prognosis and treatment planning strategies.

The specific associations that were found between interpersonal problems and symptoms might indicate directions of clinical and therapeutic emphasis. Symptoms of hostility were found to be
associated with several interpersonal octant groups. For instance, symptoms of hostility combined with domineering interpersonal problems (arguing, quarrelling), might call for other therapeutic approaches than hostility combined with more detached, low communion, interpersonal problems (i.e. more passive-aggressive).

The findings regarding self-relatedness indicate that more importance should be attached to its Self-Accepting component, which differs significantly between different predominant interpersonal problems, and may be a more sensitive measure of therapeutic change than the other self-relatedness measures in SASB introject.

First and foremost, utilizing self-report IIP-64 data as described in this thesis, i.e. by applying the structural summary method, should be given increased attention, especially in outpatient psychiatric care. The SCL-90-R is commonly in use in the clinic, both in research and in everyday psychiatric practice. However, this instrument has in itself a limited value since it, contrary to the IIP, does not give any indications regarding underlying motivational and pathogenic mechanisms. The SASB also has limited value as an instrument in everyday practice, both because of this instrument’s complexity and because of rather strict copyright regulations. Therefore, if one should choose one self-report instrument for use in psychiatric outpatient practice, we would recommend the interpersonal approach, represented by the IIP-64, and organised on basis of the structural summary variables described in this thesis. The interpersonal approach is the one that is most compatible with other theoretical approaches to psychopathology, as it encompass biological, cognitive-behavioral, humanistic and psychodynamic aspects. Interpersonal problems are closely related to the psychopathologies of personality, as well as to symptoms and self-relatedness, both in general and in more specific ways as demonstrated in this thesis. Thus, the allocation of interpersonal problems to one of the interpersonal octant groups may, in itself, give hints regarding psychopathology, including personality disorders, symptoms and poor self-acceptance.

The high prevalence of patients with interpersonal problems of submissiveness, indicates a substantial need, among health workers in psychiatric outpatient care, for knowledge and training on how to encounter persons who tend to submit, to please, to say yes when they mean no, or say yes to others and no to oneself; persons who have problems with expressing anger, and so on. The therapeutic challenges represented by patients with the opposite forms of interpersonal problems, with their tendency for being Vindictive, Domineering and Intrusive, are twofold: They probably
have a higher potential for evoking negative reactions from therapists, resulting in either blunt countertransference acting out or more subtle forms of rejection. Secondly, the relatively low prevalence of these kinds of predominant interpersonal problem among psychiatric outpatients may impede with acquiring the necessary skills and experience in relation to these patients.

13 CONCLUSIONS

• Interpersonal problems are associated with symptoms (SCL-90-R) both in general and in more specific ways. In general they are highly correlated, but more specific associations are also found, between some symptom clusters and some subgroups of interpersonal problems.

• Interpersonal problems are associated with self-relatedness (SASB Introject) both in general and in more specific ways. In general they are highly correlated, but more specific associations are also found, between the Self-Hostile component of Affiliation and subgroups of interpersonal problems.

• The IIP-64, representing the interpersonal approach, should be the preferred self-report instrument in outpatient psychiatric care. Interpersonal problems are closely related to the psychopathologies of personality, as well as to symptoms and self-relatedness, as demonstrated in this thesis.

• The structural summary method of analysing individual and group profiles of interpersonal problems (IIP-64) is recommended.
14 REFERENCES


Correction: In paper II, (Symptom patterns and interpersonal problems) there is an error in the text on p. 238, second column, second line: “By convention, an angle of 0° is placed in the Overly Accomodating (LM) sector of the interpersonal circle (…)”. The correct phrase should be: “By convention, an angle of 0° is placed in the Self-Sacrificing (LM) sector of the interpersonal circle(…)”.

(Attached)
16 APPENDIX

The computation of the structural summary variables according to Gurtman et al. is easily acquired from the raw scores, when applying the relevant syntaxes in SPSS. The stages of computation are listed below, followed by an example.

16.1 Computation of structural summary variables from IIP-64

1) From raw scores to normed scores \( (Z_n) \) on all IIP-64 subscales.
2) Computation of global score of IIP-64 (elevation): \( e = \Sigma (Z_n)/8 \)
3) Computation of COM (communion) and AGE (agency) resultant vectors:
   \[ \text{COM} = 0.25 \Sigma (Z_n \times \cos \theta_j) \]
   \[ \text{AGE} = 0.25 \Sigma (Z_n \times \sin \theta_j) \]
   To correct for scales, the sums are divided with four. The sector angles, \( \theta_j \), go by convention from 0° at LM, and counter clockwise to 45° at NO etc., to 315° at JK. (cf. Figure 1).
4) Computation of angle (displacement): \( \delta = \arctangens (\text{AGE}/\text{COM}) \).
5) Computation of vector length/intensity/amplitude: \( a = \sqrt{(\text{AGE}^2 + \text{COM}^2)} \).
6) Construction of best fit curve (i.e. finding the \( Z_n \)-scores, denoted \( Z_n' \), which give best fit to a cosine curve with maximum at the angle \( \delta \)):
   \[ Z_n' = e + a \times \cos(\theta_j - \delta) \]
7) Computation of goodness of fit: \( \text{GOF} = R^2 = \frac{SS_{\text{predicted}}}{SS_{\text{actual}}}. \)
   \( SS_{\text{predicted}} \) is the sum of squares of best fit scores, while \( SS_{\text{actual}} \) is the profile’s actual variability as the deviation sum of squares.

16.2 Computational example

1) From raw scores to normed scores \( (Z_n) \) on all IIP-64 subscales.
Example of raw subscale scores:

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Raw Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>1.28</td>
</tr>
<tr>
<td>BC</td>
<td>1.42</td>
</tr>
<tr>
<td>DE</td>
<td>1.34</td>
</tr>
<tr>
<td>FG</td>
<td>1.49</td>
</tr>
<tr>
<td>HI</td>
<td>1.58</td>
</tr>
<tr>
<td>JK</td>
<td>1.85</td>
</tr>
<tr>
<td>LM</td>
<td>1.63</td>
</tr>
<tr>
<td>NO</td>
<td>1.33</td>
</tr>
</tbody>
</table>

From raw scores to normed scores - The metrics of the subscale scores then becomes the number of (reference) standard deviations:

\[ \text{PA}_{Zn} = \frac{(1.28 - 0.78)}{0.55} = 0.91 \]
\[ \text{BC}_{Zn} = \frac{(1.42 - 0.72)}{0.54} = 1.30, \text{ etc.} \]

<table>
<thead>
<tr>
<th>Subscale</th>
<th>Raw Score</th>
<th>Norwegian Reference</th>
<th>Normed (Zn)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA</td>
<td>1.28</td>
<td>0.78 (0.55)</td>
<td>0.91</td>
</tr>
<tr>
<td>BC</td>
<td>1.42</td>
<td>0.72 (0.54)</td>
<td>1.30</td>
</tr>
<tr>
<td>DE</td>
<td>1.34</td>
<td>0.73 (0.59)</td>
<td>1.03</td>
</tr>
<tr>
<td>FG</td>
<td>1.49</td>
<td>0.95 (0.69)</td>
<td>0.78</td>
</tr>
<tr>
<td>HI</td>
<td>1.58</td>
<td>1.09 (0.70)</td>
<td>0.70</td>
</tr>
<tr>
<td>JK</td>
<td>1.85</td>
<td>1.37 (0.66)</td>
<td>0.73</td>
</tr>
<tr>
<td>LM</td>
<td>1.63</td>
<td>1.16 (0.59)</td>
<td>0.80</td>
</tr>
<tr>
<td>NO</td>
<td>1.33</td>
<td>0.93 (0.58)</td>
<td>0.69</td>
</tr>
</tbody>
</table>

Sum of normed scores: 6.94
2) Computation of global score (elevation):

\[ e = \frac{\text{Sum of normed scores}}{8} = \frac{6.94}{8} = 0.87 \]

3) Computation of COM (Communion) and AGE (Agency) resultant vectors:

\[
\begin{align*}
\text{COM} &= 0.25 \times \sum (Z_n \times \cos \theta_i) \\
\text{AGE} &= 0.25 \times \sum (Z_n \times \sin \theta_i)
\end{align*}
\]

<table>
<thead>
<tr>
<th>( \theta_i )</th>
<th>( Z_n )</th>
<th>( \sin (\theta_i) )</th>
<th>( \cos (\theta_i) )</th>
<th>( Z_n \times \sin(\theta_i) )</th>
<th>( Z_n \times \cos(\theta_i) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (LM)</td>
<td>0.80</td>
<td>0.00</td>
<td>1.00</td>
<td>0.00</td>
<td>0.80</td>
</tr>
<tr>
<td>45 (NO)</td>
<td>0.69</td>
<td>0.71</td>
<td>0.71</td>
<td>0.49</td>
<td>0.49</td>
</tr>
<tr>
<td>90 (PA)</td>
<td>0.91</td>
<td>1.00</td>
<td>0.00</td>
<td>0.91</td>
<td>0.00</td>
</tr>
<tr>
<td>135 (BC)</td>
<td>1.30</td>
<td>0.71</td>
<td>-0.71</td>
<td>0.92</td>
<td>-0.92</td>
</tr>
<tr>
<td>180 (DE)</td>
<td>1.03</td>
<td>0.00</td>
<td>-1.00</td>
<td>0.00</td>
<td>-1.03</td>
</tr>
<tr>
<td>225 (FG)</td>
<td>0.78</td>
<td>-0.71</td>
<td>-0.71</td>
<td>-0.55</td>
<td>-0.55</td>
</tr>
<tr>
<td>270 (HI)</td>
<td>0.70</td>
<td>-1.00</td>
<td>0.00</td>
<td>-0.70</td>
<td>0.00</td>
</tr>
<tr>
<td>315 (JK)</td>
<td>0.73</td>
<td>-0.71</td>
<td>0.71</td>
<td>-0.52</td>
<td>0.52</td>
</tr>
<tr>
<td>( \Sigma )</td>
<td>6.94</td>
<td>0.55</td>
<td>-0.70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[
\text{COM} = 0.25 \times (-0.70) = -0.17
\]

\[
\text{AGE} = 0.25 \times 0.55 = 0.14
\]

(Dividing COM and AGE with four (or multiplying with 0.25) allows us to interpret the length of the summary vector (intensity/amplitude) as a normed score (Horowitz 2004, p. 274).

4) Computation of angle (displacement):

\[ \delta = \arctan (\text{AGE/COM}) = \arctan (0.14/-0.17) = 142^\circ \]

5) Computation of vector length (intensity, amplitude):

\[ a = \sqrt{\text{AGE}^2 + \text{COM}^2} = \sqrt{(0.14^2 + (-0.17)^2)} = 0.22 \]

6) Construction of best fit curve, i.e. \( Z_n' \)-scores which give best fit to a cosine curve with maximum at 142 °.

\[ Z_n' = e + a \times \cos(\theta_i - \delta) \]

\[ \text{PA}_{Zn'} = 0.87 + 0.22 \times \cos (90 - 142) = 0.87 + 0.22 \times 0.62 = 1.00 \]
\[ BC_{Zn} = 0.87 + 0.22 \times \cos (135 - 142) = 0.87 + 0.22 \times 0.99 = 1.09, \text{ etc.} \]

<table>
<thead>
<tr>
<th>( \Theta_i )</th>
<th>( Zn )</th>
<th>( Zn' )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 (LM)</td>
<td>0.80</td>
<td>0.69</td>
</tr>
<tr>
<td>45 (NO)</td>
<td>0.69</td>
<td>0.84</td>
</tr>
<tr>
<td>90 (PA)</td>
<td>0.91</td>
<td>1.00</td>
</tr>
<tr>
<td>135 (BC)</td>
<td>1.30</td>
<td>1.09</td>
</tr>
<tr>
<td>180 (DE)</td>
<td>1.03</td>
<td>1.04</td>
</tr>
<tr>
<td>225 (FG)</td>
<td>0.78</td>
<td>0.89</td>
</tr>
<tr>
<td>270 (HI)</td>
<td>0.70</td>
<td>0.73</td>
</tr>
<tr>
<td>315 (JK)</td>
<td>0.73</td>
<td>0.64</td>
</tr>
</tbody>
</table>

\[
\begin{align*}
SS_{actual} & = 6.33 \\
SS_{predicted} & = 6.19
\end{align*}
\]

\( SS_{predicted} \) is the sum of squares of best fit scores, while \( SS_{actual} \) is the profile’s actual variability as the deviation sum of scores.

7) Computation of goodness of fit (GOF) = \( R^2 = \frac{SS_{predicted}}{SS_{actual}} = \frac{6.19}{6.33} = 0.98 \)

Graphic presentation of the example:

Circular plot showing raw scores and \( Zn \)-scores:
Rectangular plot showing $Z_n$-scores and best fit curve ($Z_n^*$-scores):

Best fit curve, indicating IIP Global/Elevation, Angle and Intensity/Amplitude.

![Graph showing Zn-scores and best fit curve with labels for IIP Global/Elevation, Angle, and Intensity/Amplitude.](image)