Citation:

Weis, S. & Süß, H.-M. (2005). Social intelligence - A review and critical discussion of measurement concepts. In R. Schulze & R. D. Roberts (Eds.), *Emotional intelligence: An international handbook* (pp. 203-230). Hogrefe & Huber.

10

Social Intelligence—A Review and Critical Discussion of Measurement Concepts

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Summary

This chapter provides a description of theoretical and empirical approaches to sketch the nature and scope of the social intelligence construct. Detailed attention is given to the empirical investigations of the structure and validity of this construct. Research designs and outcomes of these studies are described along a classification of the applied measurement procedures that affect the validity of the studies. Our considerations support the assumption that method-related variance can explain a substantial part of the results. Therefore, we suggest applying multitrait-multimethod designs to control for this bias. In addition, past theoretical and empirical accounts are integrated into a performance model of social intelligence with the main focus on the cognitive facets of the construct: social understanding, social memory, social perception, and social creativity. Some empirical data is provided that supports this model. The chapter concludes by discussing important conceptual and measurement issues for future research: the importance of thoroughly specifying the intended measurement construct and the corresponding task requirements, the construction of tests that reflect the real-life significance of the construct, and a well-considered validation strategy (construct and predictive validity) that also takes related constructs like emotional intelligence into account.

10.1 INTRODUCTION

Psychological research has been concerned with the study of human intelligence for over a century. From its inception on up through the present time, academic (i.e., abstract or general) intelligence represents the most examined and clearly defined construct investigated as part of this scientific enterprise. Recently, however, the concept of human intelligence has been expanded with the introduction of so-called new intelligences, that is, social, emotional, and practical. The chapters contained in this book give detailed attention to theoretical and measurement issues of emotional intelligence. Nevertheless, a comprehensive scientific treatment of emotional intelligence cannot ignore the apparently related concept of social intelligence. Apart from common acceptance that both concepts receive in all parts of contemporary society (see e.g., Gardner, 1983; Goleman, 1995; Matthews, Zeidner, & Roberts, 2002), substantial overlap can also be perceived in theoretical definitions and measurement approaches. Relying on the long research tradition of social intelligence, future research in both fields may benefit from past lessons learned. In return, it seems essential for research on social intelligence to profit from the scientific interest and concerted endeavors that are currently concentrated, to a large measure, on emotional intelligence. Despite the long tradition of research on social intelligence, both theory and measurement issues remain unresolved at a (fairly) low level of sophistication. Further examination is also indispensable to eventually identifying a viable and discriminable domain of social intelligence.

The purpose of this chapter is to provide an overview of scientific investigations in the domain of social intelligence. Comparable approaches date back many years (see Orlik, 1978; Walker & Foley, 1973, for reviews). Since then, the research landscape has changed with respect to some aspects. For example, empirical studies have begun to make use of multitrait-multimethod designs, used structural equation modeling for data analysis, and various situational judgment testing paradigms to assess the so-called "construct space". In this chapter, we review the literature on social intelligence, including findings that have been obtained recently with these newer approaches.

10.2 THEORIES AND DEFINITIONS OF SOCIAL INTELLIGENCE

Thorndike (1920) postulated a framework of human intelligence differentiating between ideas, objects, and people as the contents that human intellect has to deal with. In other words, he discriminated between academic, mechanical, and social intelligence. In this framework, Thorndike (1920) defined the latter as "the ability to understand and manage men and women, boys and girls, and to act wisely in human relations" (p. 228). Thorndike's idea of social intelligence is still fundamental to, and even more extensive than, any other given definition. Indeed, most contemporary research efforts appear to cite

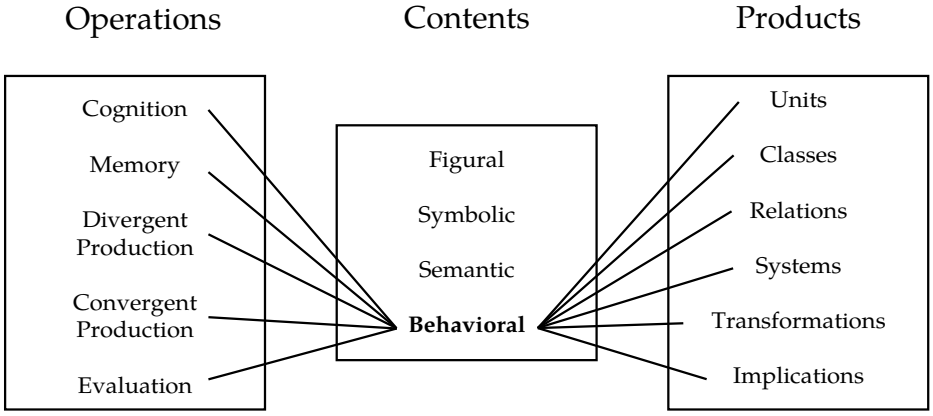

Figure 10.1 Structural Model of Human Intellect (Guilford, 1967); the domain of social intelligence (behavior) is highlighted in bold letters and the lines.

(and subsequently rely) on this definition when examining the concept of social intelligence. Notably, his distinction between cognitive (i.e., understand other people) and behavioral (i.e., to act wisely in human relations) components has been specified in only one other definition of social intelligence. Thus, Vernon (1933) defined social intelligence as "knowledge of social matters and insight into the moods or personality traits of strangers" (cognition) and as the ability to "get along with others and ease in society" (behavior) (p. 44). Other definitions focus either on cognitive or behavioral aspects. Some of these definitions, along with their chief protagonists, are listed as follows: "the ability to get along with others" (Moss & Hunt, 1927, p. 108); "judge correctly the feelings, moods, and motivation of individuals" (Wedeck, 1947, p. 133); "ability to judge people with respect to feelings, motives, thoughts, intentions, attitudes, etc." (O'Sullivan, Guilford, & deMille, 1965, p. 6); "individuals fund of knowledge about the social world" (Cantor & Kihlstrom, 1987).

Indeed, the establishment and subsequent empirical application of broad theoretical frameworks of social intelligence appear scant in the literature. The most prominent and broadest conceptualization was introduced by Guilford (1967). In his Structural Model of Human Intellect, the three dimensions of *operations*, *contents*, and *products* are pivotal. The dimension of *operations* describes the cognitive requirements participants need to accomplish a task and contains five elements. The *content* dimension, with four elements, refers to the properties of task material. Finally, the *product* dimension comprises six elements, each describing a type of outcome associated with a certain task. The model, which relies on a complex interaction between these three dimensions, is depicted in Figure 10.1.

Guilford's conceptualization resulted in 120 factors that described distinct human intellectual abilities. For Guilford, the behavioral content facet, along with its cross-classification in terms of both operations and products, represented the domain of social intelligence, thus comprising 30 (= 5 $\times$ 6) distinct abilities as demarcated in Figure 10.1. Guilford and his colleagues (Hendricks,

Guilford, & Hoepfner, 1969; O'Sullivan et al., 1965) focused on the operational domains of *cognition* and *divergent production* to construct possible measures of social intelligence. O'Sullivan and Guilford's efforts in the domain of behavioral *cognition* resulted in two test publications: the Six Factor Test (O'Sullivan & Guilford, 1966) and the Four Factor Test (O'Sullivan & Guilford, 1976) of Social Intelligence. The task material consisted, above all, of pictures. Only a few purely verbal measures were constructed. These test batteries of the *cognitive* behavioral domain received wide interest in the research community. At about the same time, Hendricks et al. (1969) specified the domain of *divergent* or "creative" production of behavioral contents according to the six possible *products*. Thus, they postulated the following constructs: the ability to engage in behavioral acts that communicate internal mental states (units), the ability to create recognizable categories of behavioral acts (classes), the ability to perform an act that has a bearing on what another person is doing (relations), the ability to maintain a sequence of interactions with another person (systems), the ability to alter an expression or a sequence of expressions (transformations), and the ability to predict many possible outcomes of a setting (implications). Although this domain of "creative" social intelligence appeared to be a meaningful facet of social intelligence performance, further reaching investigations relying on these types of operationalizations have not been forthcoming in the literature.

Both Thorndike (1920) and Guilford (1967), in their theoretical frameworks, located the domain of social intelligence as equal and discriminable on one level with the traditional domain of academic intelligence. However, empirical results suggesting the autonomy of social intelligence from academic intellectual abilities are equivocal, seemingly dependent on the measurement procedures adopted. Indeed, empirical evidence for the relation of social to emotional (or practical) intelligence barely exist. Instead, the relation of social to emotional intelligence has largely been examined using rather specific measures of social and emotional skills. For example, Davies, Stankov, and Roberts (1998) operationalized social intelligence with the Interpersonal Perception Task–15 (IPT-15 Costanzo & Archer, 1993), a performance measure of social perception presented on videotape. Additionally, they employed a performance measure of emotional intelligence, that is, the Emotion Perception in Faces Test (Mayer, DiPaolo, & Salovey, 1990). However, the two measures correlated $r = -.09$. A subsequent factor analysis showed that these measures had bipolar loadings on one factor. Given this constitutes one of the few published studies of its kind, we contend that empirical approaches investigating the relation of the two constructs, particularly those that rely on performance data, are not readily apparent in the literature.

10.3 THE ASSESSMENT OF SOCIAL INTELLIGENCE

10.3.1 Multiple Test Batteries of Social Intelligence

Two broad attempts to assess social intelligence using comprehensive test batteries are discussed in the passages that follow. These represent approaches

that seem to address problematic features put forward by various critiques of social intelligence (Orlik, 1978; Walker & Foley, 1973). These attempts aside, we note from the outset that the idea of developing tests of social intelligence from an a priori theoretical framework remains an outstanding problem in the long research tradition on social intelligence.

One of the first broad measures of social intelligence constructed is the George Washington Social Intelligence Test (GWSIT; Moss, Hunt, Omwake, & Woodward, 1955). This test is based on the authors' definition of social intelligence as "the ability to get along with others" (p. 108). A revised (short) form of the test, containing five subscales, comprises the following abilities:

Judgment in Social Situations: Find possible solutions for a social problem.

Memory for Names and Faces: Recognize target photographs previously studied and presented later among a larger group of photographs.

Observation of Human Behavior: Answer questions about human functioning on a true-false basis.

Recognition of the Mental States Behind Words: Choose the correct mental state or emotion, among four, reflected in a given statement.

Sense of Humor: Select the best ending to a joke.

Despite the authors' claim, performance in these subscales appears to be less dependent on socially intelligent behavior and more on understanding the importance of certain social milieu. Moreover, as Orlik (1978) points out, several validation studies show that variance in performance data may be explained, to a large extent, by verbal measures of academic intelligence. Whereas performance in the GWSIT has been shown to correlate up to .70 with academic (verbal) intelligence, correlations with other social intelligence indicators show no evidence for convergent validity.

A second major approach to the assessment of social intelligence was introduced by Guilford and colleagues, under the framework provided by the previously elucidated Structural Model of Human Intellect (Guilford, 1967). The following list briefly describes some examples of tasks out of the Six and the Four Factor Test of Social Intelligence (O'Sullivan & Guilford, 1966, 1976) and their classification in that model:

Expression Grouping (Classes): Participants find one facial expression, out of four alternatives, which best fit a group of three other facial expressions.

Missing Pictures (Systems): Participants are presented with a sequence of events, pictured in photographs, and have to complete the sequence by choosing the correct last photograph.

Missing Cartoons (Systems): Participants are required to fill-in a blank, in a sequence of cartoons, by selecting the correct cartoon out of four choice alternatives.

Picture Exchange (Transformations): A sequence of photographs is presented that tells a story. Participants are required to replace one marked photograph of this sequence, with one of four alternatives, in order to give the story a different meaning.

Social Translations (Transformations): This test is the only verbal measure of social intelligence in this battery. Participants are given a verbal statement made between a pair of people, in a defined social relation. They have to choose one pair of people out of three alternatives, for whom the given statement has a different meaning.

Cartoon Prediction (Implications): Participants are required to select one cartoon, out of three alternatives, that most appropriately completes a cartoon series.

As O'Sullivan et al. (1965) recognized, these tests were measures of cognitive rather than behavioral skills. The authors themselves reported no substantial correlations with general intellectual abilities (O'Sullivan & Guilford, 1966). More recent studies have focused on the construct validity of these test batteries. For example, Probst (1982) applied the Six Factor Test in an extensive study of social intelligence, finding empirical support for an independent ability construct. However, factor analysis did not yield a common social intelligence factor comprising different types of assessment methods. In another study, Riggio, Messamer, and Throckmorton (1991) neither found evidence for convergent nor for discriminant construct validity. They applied the Four Factor Test of Social Intelligence, along with a measure of academic intelligence, that is, the Wechsler Adult Intelligence Scale—Revised Edition (WAIS-R), Vocabulary Subscale (Wechsler, 1981). Furthermore, the Social Skills Inventory (SSI; Riggio, 1989) was administered as a measure of self-reported social skills. In an exploratory factor analysis, the subscales of the Four Factor Test loaded on one factor with the WAIS-R, showing near to zero correlations with the SSI. Thus, neither convergent nor discriminant construct validity were evidenced in this investigation.

10.3.2 Individual Tests of Social Intelligence

Empirical approaches that occurred after Walker and Foley's (1973) and Orlik's (1978) summarizing works, somewhat surprisingly, appear less theory-guided than those discussed in the aforementioned passages. More specific, but seemingly related concepts like social skills, nonverbal decoding skills, or nonverbal communication skills have subsequently been operationalized as indicators of social intelligence (Barnes & Sternberg, 1989; Feldman, Tomasian, & Coats, 1999; Riggio, 1986; Sternberg & Smith, 1985). With every consideration of the contributive value of these investigations, it seems somehow less difficult to find appropriate indicators of these concepts, as task requirements are more explicit and less complex. It appears necessary to classify these more narrow approaches in order to facilitate the interpretation of research results. For this purpose, operationalizations can be cross-classified along two dimensions. One is defined by the content under examination (i.e., cognitive vs. behavioral social skills), while the other dimension describes the method of assessment (i.e., performance vs. self-report data). In the following subsections, we provide a critical analysis of tests represented by this classification scheme. Note

that the treatment of self-report measures will include attempts to assess both the cognitive and behavioral dimensions of social intelligence.

Cognitive performance measures. Keating (1978) employed three verbal indicators of social intelligence performance designed previously (e.g., Chapin Social Insight Test, Chapin, 1967; Gough, 1968), as well as three measures of academic intelligence (both verbal and nonverbal material). Neither correlational nor factor analytic results supported construct validity. Within-domain correlations did not exceed across-domain correlations, and no coherent factor structure was observed. Furthermore, the social intelligence performance measures did not predict effective social functioning (assessed by peer-reports) to a larger extent than academic intelligence. Sternberg and colleagues (Barnes & Sternberg, 1989; Sternberg & Smith, 1985) operationalized the concept of nonverbal decoding skills as an indicator of social intelligence. They developed two tasks relying on similar principles. One was the so-called "Couples" Test, which contained photographs of heterosexual couples that were either in a close relationship or were strangers. Participants had to judge each photograph for the kind of relation depicted (i.e., close relationship or strangers). The second task consisted of photographs of a supervisor and his or her supervisee. In this instance, participants had to judge who the supervisor was. Barnes and Sternberg (1989) used self-report inventories of social competence, as well as performance measures of academic intelligence, to ascertain construct validity. Correlational analyses showed an unequivocal pattern with only significant convergent and non-significant discriminant validity coefficients.

Along with studies by Riggio et al. (1991) as well as O'Sullivan and Guilford (1966), these results alone only allow ambiguous conclusions about the validity of social intelligence based on performance measurement. At first blush, it seems that applying verbal performance measures results in substantial overlap between social intelligence and academic (especially verbal) abilities (Keating, 1978). Thus, investigations using nonverbal measures as indicators of socially intelligent performance succeed somewhat better in identifying a conceptually coherent domain of social intelligence (O'Sullivan & Guilford, 1966; Barnes & Sternberg, 1989). However, this result is not always demonstrated (Sternberg & Smith, 1985; Riggio et al., 1991).

The difficulties of both verbal and nonverbal cognitive performance measures in defining an unequivocal social intelligence construct could be attributed to a methodological problem. According to Schneider, Ackerman, and Kanfer (1996), certain characteristics of social cognitive tasks increase the overlap with academic intellectual abilities by matching their typical measurement features. These characteristics include: when participants encounter social stimuli that are inconsistent with their expectancies, when participants are faced with novel stimuli, and when participants are faced with highly structured tasks (Schneider et al., 1996, p. 469). Among cognitive performance measures of social intelligence, above all, those relying on verbal material seem to meet all three criteria. The sequential type of presentation inherent to writ-

ten language does not seem to be an adequate operationalization of more or less complex social stimuli. Instead, written language appears to be distinct from socially relevant stimuli found in real-life settings. Plausibly, this type of presentation confronts the participants with novel (or thus far unexperienced) stimuli that implicate cognitive functions that parallel those necessary for the accomplishment of academic intelligence tests.

Behavioral performance measures. Ford and Tisak (1983) applied a performance measure of socially intelligent behavior as an indicator of social intelligence. Participants' behavior in an interview situation was rated along certain criteria (e.g., the ability to speak effectively, to be appropriately responsive to the interviewer's questions, to display appropriate nonverbal behaviors). Additionally, the authors assessed self- and other-reported social behavioral skills and academic intelligence. Correlational, as well as factor analytic, results suggested a distinct social intelligence construct. Within-domain correlations exceeded across-domain correlations, and social intelligence measures loaded on a separate, interpretable factor.

A comparable study was conducted by Frederiksen, Carlson, and Ward (1984). Again, performance in an interview setting served as an indicator of social intelligence. Participants had to take the role of a doctor who was interviewing his/her patient. Additionally, Frederiksen et al. (1984) applied various measures of academic intelligence and problem-solving abilities. Results showed only a few substantial correlations between interview performance and academic intelligence measures. These correlations were partly negative in sign, suggesting that high academic intelligence was accompanied by low social behavioral skills.

Finally, Stricker and Rock (1990) applied a technique similar to the interview settings described thus far. Stricker developed his own measure of socially intelligent behavior, the Interpersonal Competence Inventory (ICI). The ICI was based on video scenes containing an interview situation between a subordinate and his superior. In the Replies section, participants had to respond orally to the subordinate in place of a superior. Answers were judged in terms of effectiveness and originality. In the Judgment section, participants had to write down their description of the situation and its important features. The performance criterion was accuracy. Conceptually, the Replies section operationalized socially intelligent behavior, whereas the Judgment section assessed, for the most part, cognitive skills. Along with the ICI, Stricker and Rock (1990) assessed non-verbal social skills, academic intelligence, and self-reported social intelligence. Results from correlational and multidimensional scaling analyses showed no coherent structure either within the domain of social intelligence or concerning the relation of social intelligence measures to academic intelligence. Social intelligence performance measures correlated inconsistently with each other (between $r = -.08$ and .37) and the Judgment section of the ICI correlated substantially with the verbal measure of academic intelligence ($r = .30$).

The interpretation of results in the aforementioned studies allows us to draw some tentative conclusions concerning the validity of social intelligence. Both Ford and Tisak (1983) as well as Frederiksen et al. (1984) succeeded in separating social from academic intelligence thus proving discriminant construct validity. However, Frederiksen et al.'s (1984) findings—partly negative correlations with academic performance—raise doubts about the nature of the performance construct of social intelligence. It should be expected that a so-called "intelligence" construct would at least be slightly positively correlated with traditional measures of academic intelligence. Furthermore, a strict account would note that the generalization of the findings is restricted to a rather specific (albeit practically meaningful) instantiation of the social context in which humans interact: interview settings. Finally, it must be stated that the convergent construct validity was not convincingly proven in these studies, neither for the restricted interview settings as indicators of social intelligence nor for a possibly more general social intelligence construct.

Self-reported social intelligence. Numerous studies have applied self-report inventories as measures of social intelligence. In several of these investigations self-reported social skills serve as psychologically meaningful validation criteria (Barnes & Sternberg, 1989; Ford & Tisak, 1983; Frederiksen et al., 1984; Riggio et al., 1991). However, there are a large number of studies that rely *only* on self-reported social skills as indicators of social intelligence (Brown & Anthony, 1990; Marlowe, 1986; Riggio, 1986).

We have already described Riggio et al.'s (1991) study in the context of the O'Sullivan and Guilford (1976) test battery. In this investigation, the subscales of the Four Factor Test of Social Intelligence loaded on one factor together with academic intellectual abilities, whereas the subscales of the Social Skills Inventory (SSI; Riggio, 1989) loaded on a separate factor. Self-reported social skills and performance measures of social intelligence did not correlate substantially and only one correlation (viz., the Social Translation Subtest with the SSI) reached significance. However, other studies employing both self-reported social skills and social intelligence performance tests report evidence of convergent validity (Barnes & Sternberg, 1989; Ford & Tisak, 1983).

Riggio (1986) validated the SSI using the traditional personality scales of the 16 Personality Factor Questionnaire (16PF). The SSI contained six subfacets that resulted from a cross-classification of contents (viz., social vs. emotional contents) and postulated skills (viz., sensitivity, expressivity, and control). Summarizing these results, the SSI subfacets correlated substantially with various personality traits (e.g., social expressivity: outgoing, happy-go-lucky, venturesome, group dependent; social sensitivity: affected by feelings, shy, astute, apprehensive, conservative, tense, undisciplined). Moreover, participants scoring high on the different SSI subfacets could be described by a differing personality structure. According to Riggio (1986), these results proved the convergent validity of SSI as a measure of nonverbal social skills. His conclusion was also supported by further validity evidence: high scorers on the SSI tended to report more socially effective behavior and richer social contacts

(Riggio, 1986). The aforementioned findings of Riggio et al. (1991) put some ambiguity into this interpretation. In terms of Schneider et al.'s (1996) criticisms, the subscales of the Four Factor Test of Social Intelligence embodied operationalizations that were conceptually too close to academic intelligence performance measures. Thus, they represent no valid operationalization of the social intelligence ability construct. From another viewpoint, it is also possible that these results could be attributed to common method-related variance in self-report and performance data.

To examine these propositions more closely, two other studies are worth noting. Marlowe (1986) operationalized social intelligence via a self-report instrument. He intended to demonstrate that social intelligence would show independence from academic intelligence. Secondly, Marlowe postulated the multidimensionality of social intelligence. He extracted four dimensions from the empirical literature. Along these dimensions, social intelligence includes social interest, social self-efficacy, empathy skills, and social performance skills. Factor analytic results of the social intelligence measures yielded five separate factors labeled pro-social attitudes, social skills, empathy skills, emotionality, and social anxiety. The postulated dimensions could thus not be instantiated, though there was clear evidence for the multidimensionality of social intelligence. Correlational analyses suggested construct independence, showing near to zero correlations with academic intellectual abilities assessed by performance data. Anyway, evidence for the convergent construct validity was again missing.

Subsequently, Brown & Anthony (1990) found similar results. They assessed self- and peer ratings of both social behavior and personality traits, along with general intellectual performance. A factor analysis resulted in a clearly defined factor structure. The three factors were identified as: (a) academic intelligence, (b) peer ratings of both social behavior and personality, and (c) self-reported social behavior and personality. However, it seems plausible that these findings point to meaningful method-related variance, which is inherent to different measurement approaches.

10.3.3 Recent MTMM Studies

Most of the aforementioned approaches did not clarify the role of the intended measurement constructs in a putative higher-order framework of social intelligence. During the past decade, however, attempts have been made to apply multitrait-multimethod (MTMM) designs for a better understanding of the structure and construct validity of social intelligence (Jones & Day, 1997; Lee, Day, Meara, & Maxwell, 2002; Lee, Wong, Day, Maxwell, & Thorpe, 2000; Wong, Day, Maxwell, & Meara, 1995). All these investigations have assessed verbal and nonverbal performance measures, as well as self- and sometimes other-report data, of the respective trait-facets. Furthermore, the use of confirmatory factor analysis in these studies allowed the separation of trait- and method-related variance to derive an empirically defensible structural model of social intelligence.

In the first of these studies, Wong et al. (1995, Study 1) set out to measure academic intelligence, social perception as a cognitive facet of social intelligence, and socially intelligent behavior (operationalized as effective heterosexual interaction). The latter included ratings of both verbal and nonverbal behavior in a first encounter between a male and a female (recorded on videotape). Verbal social perception was operationalized by a subtest of the George Washington Social Intelligence Test (i.e., recognition of the mental state behind words, see above). The Expression Grouping subtest of the Four Factor Test of Social Intelligence (O'Sullivan & Guilford, 1976) was also used as a measure of nonverbal social perception. Results yielded a model with four uncorrelated method-factors (viz., verbal, nonverbal, self-report, and other-report) and three correlated trait-factors (viz., academic intelligence, social perception, and effective heterosexual interaction). However, both zero-order correlations as well as trait-factor intercorrelations pointed to substantial overlap between social perception and academic intellectual abilities ($r = .67$), a value that exceeded the intercorrelation between social perception and effective heterosexual interaction ($r = .54$).

In the second of these studies, Wong et al. (1995, Study 2) postulated three facets of social perception, social insight, and social knowledge. In the verbal measures of social knowledge, participants had to identify the best solution for a social problem. The nonverbal measure demanded the identification of etiquette mistakes, pictured in drawings. Verbal social perception was operationalized by the Social Translation Test of the Four Factor Test of Social Intelligence (O'Sullivan & Guilford, 1976), while the nonverbal measure of this facet was again the Expression Grouping subtest of the same test battery. The verbal measure of social insight was the Judgment in Social Situations subtest of the GWSIT (Moss et al., 1955). The nonverbal measure was the Cartoon Prediction subtest of O'Sullivan and Guilford (1976). The authors successfully identified the cognitive facets of social insight and social knowledge as trait-factors separable from, but positively related to, academic intelligence. Social perception could not be separated from social insight.

In yet another study, Jones and Day (1997) applied Cattell's distinction of fluid versus crystallized intelligence on the social intelligence construct and thus operationalized verbal and nonverbal social cognitive flexibility (fluid intelligence) and verbal and nonverbal social knowledge (crystallized intelligence). The nonverbal measure of social cognitive flexibility contained short video clips of ambiguous social situations. Participants had to list all possible interpretations of each scene. The verbal task of this facet included written descriptions of ambiguous social situations. Participants had again to list all possible interpretations. The Expression Grouping subtest of O'Sullivan and Guilford (1976) represented the nonverbal measure of social knowledge. The Social Translation subtest (O'Sullivan & Guilford, 1976) was used as the verbal measure of social knowledge. Jones and Day (1997) could show a trait-factor of social cognitive flexibility again separable from, but positively related to, academic problem solving, whereas social knowledge could not be separated from academic problem solving.

Extending on these findings, Lee et al. (2000) operationalized both fluid and crystallized social and academic intelligence. The authors specified fluid and crystallized social intelligence as social inference and social knowledge, respectively. Results showed that all four postulated trait-factors were discriminable from each other. Lee et al. (2002) diverged from the just described approaches by using tasks with open-ended questions to operationalize social knowledge and the flexible application of it. Thus, they rather represented the ideas of Cantor and Kihlstrom (1987), who claimed that open-ended questions would be more indicative of real-life social problems than tasks with just one correct answer. The verbal measure of social knowledge was the Role Category Questionnaire (see Lee et al., 2002). Participants had to write detailed descriptions of persons fitting into a certain kind of social role (e.g., liked same sex friend). In the nonverbal measure of social knowledge, participants had to describe as fully as they could well-known target persons (e.g., Oprah Winfrey), whose photos were presented on screens. Answers were scored in terms of the number of different personality and behavioral characteristics identified. The verbal and nonverbal measure of social cognitive flexibility represented the same as applied in the study of Jones and Day (1997). Results of this study showed separable social intelligence trait-factors distinct from, but positively correlated with, (general) creativity.

In summary, these MTMM-studies provide clear evidence for the multidimensionality of social intelligence. However, although the method-related variance of self- and other-report data was controlled by the introduction of method-factors or correlations among the respective measures, trait-factor loadings vary strikingly between performance measures and self- and other-report data. Moreover, the different measurement procedures exhibit no coherent loading pattern on one trait-factor. Consequently, it remains uncertain what influence the inclusion of self- and other-report data has on the identified trait-structure. Particularly, no further (convergent) validity evidence was available since self-report data were already included in the social intelligence models.

10.3.4 Summary

In spite of the early, extensive work of Guilford and his colleagues on social intelligence and their attempts to establish a theoretical framework, not many comparable systematic approaches may be found in the literature. Most empirical studies focus on a single, very specific *cognitive* aspect of social intelligence. These operational definitions seldom clarify the role of measurement constructs within the context of a higher-order framework. In addition, MTMM approaches do not conceptually integrate lower-order facets of social intelligence (and their concomitant cognitive determinants) into a comprehensive model of social intelligence. Since there is clear evidence for the multidimensionality of social intelligence (Lee et al., 2000, 2002; Wong et al. 1995), it seems important for future studies to locate constructs within a coherent, taxonomic model of social intelligence. The same kind of critique might be

addressed to approaches focusing on the measurement of social *behavioral effectiveness*. Neither the role of effective social behavior in a framework of social intelligence nor an internal classification of relevant social settings appears to underlie extant approaches.

Empirical evidence for the construct validity of social intelligence varies strikingly across the measurement procedures that have been adopted. For example, self-report inventories and behavioral effectiveness criteria suggest a distinct domain of social intelligence. Approaches relying on verbal (and sometimes also nonverbal) tasks fail to provide incontrovertible evidence of a discriminable performance construct. However, the problems associated with the various types of measurement procedures remains an empirical issue. It is relatively self-evident that self-report data better serve as measures of typical social intellectual performance in comparison to measures of a performance construct that is based on the idea of maximal performance. Approaches relying on pure performance measurement should carefully consider the nature of the task material, both with respect to the selection of convergent validity criteria and to real-life congruence (Schneider et al., 1996).

10.4 FACETS OF SOCIAL INTELLIGENCE

In this section, we will attempt to integrate past theoretical and empirical work into a performance model of social intelligence. This model is based on the idea of a faceted intelligence model as a framework for the description and classification of variables or tests (Süß & Beauducel, 2005), the main focus of which will be various *cognitive* facets. It does not lay claim on completeness or conclusiveness and will need to be supported by empirical data. In any event, considering the diversity of past empirical approaches, it seems necessary to classify the theoretical and operational definitions of social intelligence in a unified framework. The model is based on five cognitive facets: social understanding, social memory, social perception, social creativity (or flexibility), and social knowledge. After a description of this model, we will provide some preliminary results of a study based on this performance model.

10.4.1 A Taxonomy of Cognitive Facets of Social Intelligence

The facet of *social understanding* (or insight) was included in a large number of theoretical and operational definitions, given different labels but comprising similar requirements. It can be perceived as the pivotal facet of social intelligence in past investigations. Thus, several definitions of social intelligence referred to in Section 10.2, namely, the ability to understand people (Thorndike, 1920), the ability to define a given situation in terms of the behavior imputed to others present (Chapin, 1942), and to judge correctly the feelings, moods, and motivations of individuals (Wedeck, 1947) could all be subsumed under the facet of social understanding or social insight. Additionally, both broad and specific operationalizations of socially intelligent cognition may be classi-

fied under this facet: the GWSIT (Moss et al., 1955), the Chapin Social Insight Test (Chapin, 1967; Gough, 1968), the broad test batteries of O'Sullivan and Guilford (1966, 1976), nonverbal decoding skills (Barnes & Sternberg, 1989), and so forth. Social understanding abilities thus require individuals to interpret or understand given social stimuli, which may vary according to their complexity, in terms of the implications for the situation and their underlying features. The point is well illustrated by a sample test requirement: understand correctly what a person wants to express via verbal or nonverbal means of communication.

The facet of *social memory* (i.e., behavioral memory) was included in the Structural Model of Human Intellect (Guilford, 1967). Kosmitzki and John (1993) also discovered a social memory factor in laypersons' implicit theories about social intelligence, that is, memory for names and faces. One documented operationalization is that provided by Moss et al. (1955) in the GWSIT (see also Probst, 1982). They operationalized social memory as memory for names and faces. The facet of social memory requires the intentional storing and recall of both episodic and semantic memory contents. Correspondingly, social memory performance is determined by the conscious recall of objectively and explicitly given social information that can vary along a continuum of complexity.

So far, the facet of *social perception* has not been reflected in theoretical accounts of social intelligence. Nevertheless, according to our view, the ability to perceive socially relevant information should play a role in a performance model of social intelligence. The ability to (quickly) perceive social information in a given situation could determine further information processing that is relevant for the exhibition of socially intelligent behavior. Only Wong et al. (1995) attempted to operationalize social perception. However, they did not succeed in separating social perception from social understanding abilities. These results could be attributed to the requirements of the selected tasks. The tasks also included interpretational demands that, in our view, cannot be subsumed under the facet of pure perceptual abilities. To meet these conceptual requirements, social perception can be specified as social perceptual speed, analogous to the idea of perceptual speed in models of academic intelligence (Carroll, 1993; Thurstone, 1938).

Social creativity (or flexibility) was conceptualized in Guilford's Structural Model of Human Intellect (Guilford, 1967) as divergent production of behavioral contents. Recent empirical work (Jones & Day, 1997; Lee et al., 2002) operationalizes social cognitive flexibility as the fluent production of possible interpretations of, or solutions for, a given social situation. Importantly, participants' performance is not based on one correct answer but on the number and diversity of ideas. The measures used by both Jones and Day (1997) and Lee et al. (2002) to define this construct were partly in line with Guilford's early propositions. Note that these authors were capable of successfully distinguishing the domain of social cognitive flexibility from academic intellectual abilities.

Social knowledge has been given credence in the definitions of Vernon (1933, viz., knowledge of social matters) and Cantor and Kihlstrom (1987, viz., individual's fund of knowledge about the social world). The concept of social knowledge also plays a substantial role in recent conceptualizations of practical intelligence and the related concept of wisdom (Baltes, Staudinger, Maercker, & Smith, 1995; Staudinger, Lopez, & Baltes, 1997; Sternberg, 1998; Sternberg et al., 2000). So far, social knowledge has mostly been operationalized by measures relying on knowledge of good etiquette (Lee et al., 2000; Wong et al. 1995). Contrary to these operationalizations, Kihlstrom and Cantor (2000) differentiated between procedural (or so-called tacit knowledge) and declarative social knowledge. They postulated that procedural knowledge could not be taught or recalled explicitly, in contrast to declarative knowledge and the corresponding memory components of episodic and semantic memory. With respect to these considerations, social knowledge can be specified as contents stored in the procedural memory component that cannot be taught or recalled explicitly.

Given these constraints, social knowledge becomes conceptually distinct from social memory. However, social knowledge, as specified in these considerations, is dependent on the influence of the cultural environment in general or the specialty of the situation (Weber & Westmeyer, 2001). The assessment of social knowledge, thus, would require a comprehensive classification of possible social situations. Still, any assessment would be subject to respective cultural values and standards.

From this description, it is not possible to conclude how these facets interact to enable people to exhibit socially intelligent behavior, in general. These cognitive determinants need not necessarily stand on one and the same level and, thus, contribute to higher-order performance to the same extent. Figure 10.2 portrays the proposed model of social intelligence including the cognitive facets, their possible interactions with each other, and with social behavior as the outcome of social cognitive intelligence.

In this illustration, the just described facets constitute the social (cognitive) intelligence construct. However, the facet of social knowledge, as depicted in Figure 10.2, does not play the same role as the other four facets. It seems reasonable to assume that social knowledge (as a kind of meta-concept) might also influence the performance, for example, in social understanding or social perception abilities. Furthermore, it is questionable whether social knowledge only contains cognitive requirements, following the aforementioned considerations of Weber and Westmeyer (2001). Altogether, the social cognitive facets surely determine social behavior performance to an important degree. However, the extent of this determination and, hence, the final exhibition of socially intelligent behavior is also influenced by some other, at this point indeterminate, array of person and environmental variables (i.e., situational demands, moods, personality, aims, etc.), as indicated in the figure.

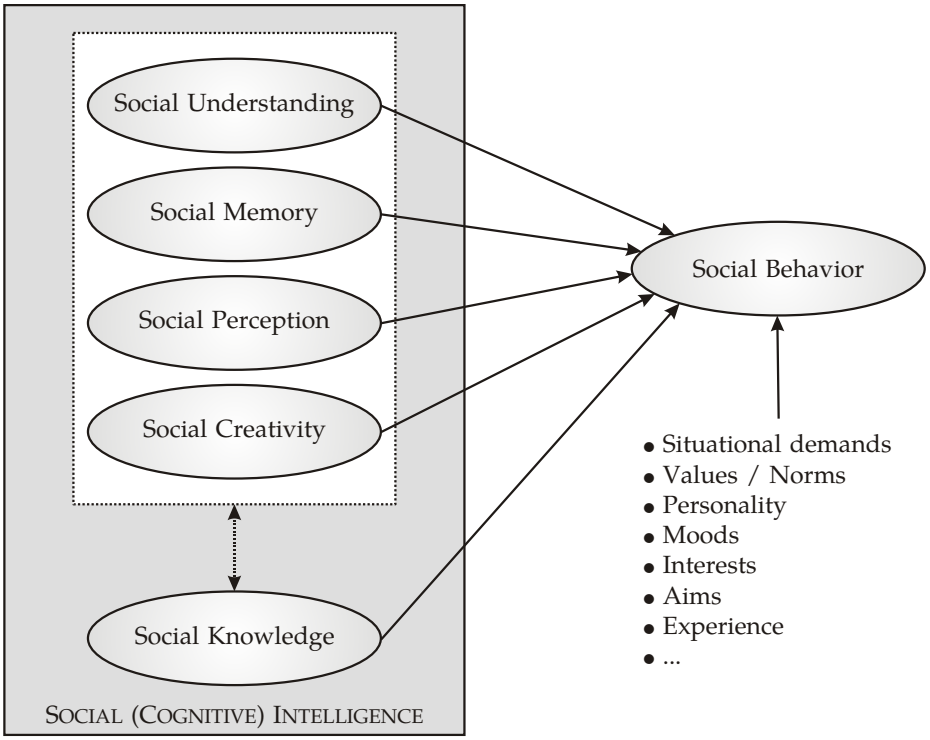

Figure 10.2 A possible performance model of social intelligence, including five cognitive facets.

10.4.2 A Preliminary Test of the Model

The focus of the present investigation (Weis & Süß, 2004) was to assess three cognitive facets of social intelligence: social understanding, social memory, and social knowledge, based on performance measures. To control possible effects of task material, we used verbal tasks, pictures, and videos. The verbal measures of social understanding were the Chapin Social Insight Test (SIT; Chapin, 1967; Gough, 1968) and the Social Translation subtest (O'Sullivan & Guilford, 1976). The pictorial measure of social understanding was the Faces Test (Mayer, Salovey, Caruso, and Sitarenios, 2002), while the video-based measure was the Interpersonal Perception Task–15 (Costanzo & Archer, 1993). The tasks for the social memory facet were all newly constructed. The Tacit Knowledge Inventory for Managers (TKIM; Wagner & Sternberg, 1991) served as the verbal measure of social knowledge. A confirmatory factor analysis supported the postulated trait structure within the social intelligence performance measures, when variance due to verbal content was controlled. The fit indices for model with best data fit were as follows: CFI $= .964$; $\chi^2(26) = 30.277$, $p = .256$; RMSEA $= .037$ with a 90% confidence interval of $[.000, .085]$; SRMR $= .056$. The model is depicted in Figure 10.3. It postulated three correlated trait-factors corresponding to the design of the study (viz., social understanding, memory, and knowledge) and a verbal factor with loadings from all measures based on verbal material.

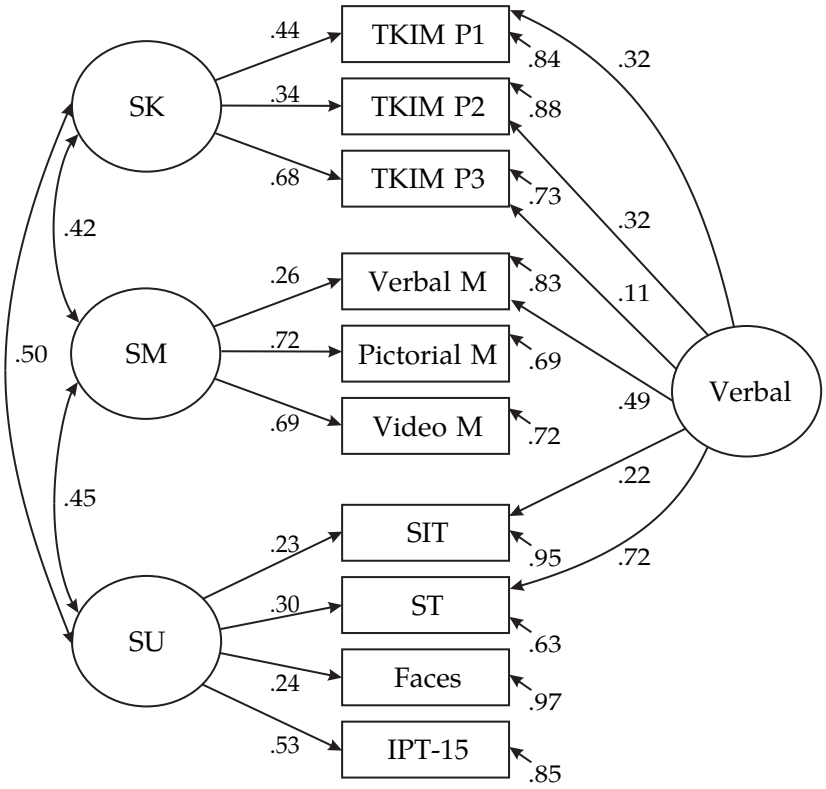

Figure 10.3 Structural model of social intelligence (standardized solution; ML). SK = Social Knowledge; SM = Social Memory; SU = Social Understanding; TKIM P1–3 = Tacit Knowledge Inventory for Managers Parcel 1–3; SIT = Chapin Social Insight Test; ST = Social Translation Test; Faces = Faces Test; IPT–15 = Interpersonal Perception Test–15.

The social knowledge factor correlated significantly with the social memory and the social understanding factor (.42 and .50, respectively). The social memory and social understanding factors also correlated significantly (i.e., .45). The factor loadings of the manifest variables on the respective trait-factors showed a coherent pattern. The loadings on the verbal method factor were heterogeneous, but all verbal indicators loaded positively on this factor.

We further investigated whether social intelligence was separable from academic intelligence, as specified by the Berlin Intelligence Structure Test (BIS-Test; Jäger, Süß, & Beauducel, 1997). Correlational and multiple regression analysis showed domain-specific overlap of the social intelligence trait-factors with specific domains of the BIS (Weis & Süß, 2004). Results from confirmatory factor analysis suggested still separable trait-factors of social and academic intelligence. Additionally, several social intelligence self-report inventories and scales of Extraversion, Openness, and Agreeableness were assessed. However, just as in past studies, results did not show any evidence for the convergent construct validity of performance based social intelligence with self-reported social skills. Furthermore, self-report data on social intelligence could be explained, to large measure, by the personality traits that we assessed.

10.5 SOCIAL INTELLIGENCE: CURRENT AND FUTURE PERSPECTIVES

Despite arguably uncritical acceptance of social or emotional intelligence as relevant individual differences constructs, the introduction of new statistical methods (e.g., structural equation modeling) provides opportunities for clarifying formerly unresolved problems. Furthermore, recent advances in technology, including digital means of stimulus recording, preparation, and presentation, allow the application of task material that is closer to real-life scenarios than paper-and-pencil drawings or black and white copies of photographs. However, future research on social intelligence is still faced with overcoming the failures and difficulties of past research and, thus, the challenge of proving the nature, structure, convergent and discriminant validity, and predictive value of the social intelligence construct.

10.5.1 Importance of Resolving Conceptual Issues

Ford (1994) claimed that social intelligence could not be specified as a pure ability construct. According to Ford, individual differences in socially intelligent performance should not be specified without considering situational demands, social values, and personal aims. Weinstein (1969) also related socially intelligent behavior to its underlying intentions. For Weinstein, one aspect of social intelligence is the ability to manipulate the responses of others. As a matter of course, the eventual exhibition of social behavior cannot be specified without considering, and perhaps specifying in advance, the relevant delimiting conditions in which social intelligence operates. Nevertheless, it is necessary to differentiate between the fundamental cognitive ability structure and the conditions that allow or influence the final performance of social behavior. If not, this criticism might justifiably be applied to the construct of academic intelligence. Of course, intelligent performance in real-life situations certainly depends on present moods or motivation, and/or on peer group values (Steele, 1997). So do socially relevant personality traits (e.g., Agreeableness, Extraversion), while social interests clearly influence socially intelligent behavior in everyday-life. Even so, certain cognitive determinants of socially intelligent behavior are necessary requirements for the accomplishment of social tasks and need to be identified by empirical research. Consequently, concepts like social engagement, social interests, or Machiavellian world views should not be confounded with a pure social (cognitive) intelligence construct.

No matter whether future studies rely on broad measurement approaches or rather focus investigation on specific domains of social intelligence, the conceptualization of the design demands a thorough specification of the intended measurement constructs and the corresponding task requirements. This approach has proven useful in the academic intelligence domain and we argue that it is equally important when considering social intelligence. Thus, even when the focus is on a narrow constructs, which claim to measure social intelligence in terms of specific social skills, there will be a need to place these con-

structs within a higher-order framework. Analogous to Carroll's idea to systematically integrate the various specific and more general constructs of academic intelligence in his hierarchical Three-Stratum-Theory (1993), it might be possible to establish a framework of social intelligence with comparable characteristics. In his late work, Guilford (1981, 1985) already recognized the possibility of several higher-order factors within his Structure of Intellect Model. Anyway, empirical studies and theoretical accounts are far away from solving these questions that are thus still subject to speculations.

10.5.2 Resolving Measurement Issues

Design issues. Besides these fundamental conceptual concerns, past research has clearly demonstrated that the application of MTMM designs is inevitable for avoiding any effects of task material on the research results. Additionally, the construction of new tests appears necessary for all different facets of social intelligence. The latest technical developments, (i.e., DVD, digital cameras, web-based test delivery, and so forth) allow the development of task materials that are closer to real-life scenarios than only verbal performance measures. Relying on spoken language (auditory stimuli) seems just one way to realize the assessment of socially relevant attributes. Furthermore, new tests should take into account the topicality of the social milieu (just as intelligence tests need to be modified to take into account emerging historical events, technologies, and the like).

Validation. According to the postulated performance model of social intelligence, social behavior appears to be an adequate criterion to validate social cognitive intelligence. However, considering the aforementioned criticisms, the conceptualization of appropriate indicators of social behavior seems to be a difficult obstacle to traverse. The exhibition of intelligent social behavior is certainly influenced by the social environment, present moods, prevailing social norms, values, and so forth. In this respect, it appears difficult, if at all possible, to assess performance in real-life contexts under the control of all relevant boundary conditions constituting the social world. This point notwithstanding, it appears important not to lose sight of the need to specify limiting conditions in advance. Consequently, future studies need to establish a more comprehensive classification of social settings and both universally and specifically valid criteria for the judgment of socially intelligent behavior.

Investigating the construct validity of social intelligence also needs to match the latest state-of-the-art in scientific research in terms of the selection and specification of validation criteria. Certainly, the replication of past findings by applying similar or the same measures of academic intellectual skills is valuable. However, in order to gain further information about construct validity, validating social intelligence performance with what are now thought of as relatively obsolete indicators of academic intelligence (e.g., simple grade point average) or apparently deficient operationalizations of *g* appears inadequate. In any case, it should be stated clearly, in correspondence with under-

lying theory, what type of academic intelligence is purportedly assessed (i.e., *g*, crystallized intelligence, reasoning abilities, or some other constellation of measurement constructs) and the strata upon which the construct resides (see Carroll, 1993).

Building the bridge to the main topic of this book, certainly, empirical investigations are required that allow conclusions about the overlap of social intelligence to the purportedly related concept of emotional intelligence (Matthews et al., 2002). As mentioned at the beginning of this chapter, at an empirical level, few data is available that provides evidence for the relation of the two constructs (Davies et al., 1998). At a theoretical level, some commentators see the constructs as positively interrelated (Salovey & Mayer, 1990; Sternberg et al., 2000). More specifically, Salovey and Mayer (1990) defined "emotional intelligence as a subset of social intelligence" (p. 189). At the same time, emotional intelligence was conceptualized as a kind of metacognitive ability (Goleman, 1995) with effects on all kinds of cognitive tasks, including tasks from the domain of social intelligence. Anyway, the absence of a common model of social intelligence and the elusiveness of emotional intelligence (Zeidner, Matthews, & Roberts, 2001) inhibits a more detailed theoretical description of construct overlap.

Consequently, any statement about the relation of these two constructs can, at present, only be derived from a comparison of operationalizations. For example, the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT; Mayer et al., 2002) is based on a performance model of emotional intelligence (Mayer & Salovey, 1997) containing four branches of different classes of abilities: perception of emotion (Branch 1), emotional facilitation of thought (Branch 2), understanding emotions (Branch 3), and managing emotions (Branch 4). A detailed description of the model and the four branches can be found in Chapter 2 by Neubauer and Freudenthaler in this volume. Table 10.1 contrasts the operationalizations of the MSCEIT with some traditional operationalizations of social intelligence.

Table 10.1 Operationalizations of the MSCEIT (Mayer et al., 2002) and Corresponding Tests of Social Intelligence

Operationalizations of the MSCEIT			Operationalizations of social intelligence	
Tasks	Description		Exemplary description	Test
Branch 1: Faces	Test-takers are asked to identify how a person feels based upon their facial expression.	$\subseteq$	**Faces**: Choose the one of four photographed men's faces that expresses the same feeling as that of a woman's face.	Faces; Expression Grouping*; Picture Exclusion; Expression Exchange (O'Sullivan et al., 1965)
			Picture Exclusion: Choose the one of four photographed expressions that does not belong to the other three.	
			IPT-15: Judge a social situation presented on videotape in terms of the depicted meaning (e.g., the relation of two persons, possible deception, etc.).	IPT-15 (Constanzo & Archer, 1993)
			Couples Test: Recognize whether a photograph of a man and a woman represents a couple or two strangers.	Couples Test (Barnes & Sternberg, 1989)
Branch 1: Pictures	Test-takers have to indicate the extent to which certain images or landscapes express various emotions.	$\neq$		
Branch 2: Synesthesia	Test-taker are asked to compare different emotions to different sensations, such as light, color, and temperature.	$\neq$		

table continues

Table 10.1 Operationalizations of the MSCEIT (Mayer et al., 2002) and Corresponding Tests of Social Intelligence

Operationalizations of the MSCEIT			Operationalizations of social intelligence	
Tasks	Description		Exemplary description	Test
Branch 2: Facilitation	... measures the test-taker's knowledge of how moods interact and support our thinking and reasoning.	$\subseteq$	**Cartoon Implications**: Choose the one of four verbal statements that describes what precedes, or will follow a cartoon situation. **Questions II**: Choose the one of four alternative questions that might have provoked a given photographed facial expression. **Chapin SIT**: Asks the test-taker to select the most logical or intelligent solution or explanation for a given social problem.	Missing Cartoons* Picture Exchange* Social Translation* Cartoon Prediction* Cartoon Implications; Questions II (O'Sullivan et al., 1965); Chapin SIT (Chapin, 1967; Gough, 1968); IPT-15
Branch 3: Changes	... measures the test-taker's knowledge of experiencing possibly conflicting emotions in certain situations and understanding "emotional chains", or how emotions transition from one to another.	$\subseteq$		
Branch 3: Blends	... refers to being able to connect situations with certain emotions.	$\subseteq$		
Branch 4 EM	... asks the test-taker to rate the effectiveness of alternative actions in achieving a certain result, in situations where a person had to regulate their own emotions.	$\approx$	**Chapin SIT**: Asks the test-taker to select the most logical or intelligent solution or explanation for a given social problem. **TKIM**: Situations in the context of business settings, each is followed by possible actions. Participants have to rate the effectiveness of each action for the solution of the presented problem. According to the manual, the TKIM assessed knowledge about managing oneself, others, and tasks.	Chapin Social Insight Test (SIT; Chapin, 1967; Gough, 1968) TKIM (Wagner & Sternberg, 1991)
Branch 4: EiR	... asks test-takers to evaluate how effective different actions are in achieving an outcome involving other people.	$\approx$		

Notes. EM = Emotion management; EiR = Emotions in relationships.

* The task has already been described in the section about test batteries of social intelligence.

$\neq$ No comparable operationalization in the domain of social intelligence.

$\subseteq$ The ability purportedly assessed by this task contributes to the accomplishment of the social intelligence test.

$\approx$ The task requirements rather equal those necessary for the social intelligence test.

Without going too much into detail of the single operationalizations, most of those belonging to the social intelligence domain were included in the test batteries of O'Sullivan and Guilford (1966, 1976) and have already been described in the first part of this chapter. Some aspects of the overview shown in Table 10.1 need to be commented on. Two tests of the MSCEIT (Pictures and Sensations) do not find any equivalent operationalizations in the domain of social intelligence. From our viewpoint, it is not conceivable to construct equivalent measures for the assessment of social intelligence, as can be done for other tests of the MSCEIT. For two tests (Emotion Management [EM] and Emotions in Relationships [EiR]), the TKIM (Wagner & Sternberg, 1991) represents a test with rather equivalent cognitive requirements, only differing with respect to the range of contents of the predetermined aim of actions (EM: regulate one's own emotions; EiR: achieving an outcome involving other people; TKIM: the combination of both for the solution of a given problem). Comparably, the Chapin SIT (Chapin, 1967; Gough, 1968) asks the test-taker to identify the most logical or intelligent solution or explanation for a given social problem and just omits the effectiveness ratings for the alternatives. Furthermore, for most of the MSCEIT tasks the purported task requirements contribute to the accomplishment of several social intelligence tests. For example, the ability to identify how a person feels based upon their facial expression (Faces, MSCEIT) contributes to the performance in the Faces Test of O'Sullivan et al. (1965) (choose one of four photographs of men's faces that expresses the same feeling as that of a woman's face). Moreover, the ability to perceive emotions as specified in the Faces Test of the MSCEIT surely contributes to the accomplishment of the Couples Test (Barnes & Sternberg, 1989) where test-takers have to decide whether a pictured couple represents a real or a faked couple. Furthermore, the knowledge of how moods interact (Facilitation Task) surely contributes to the ability to choose the one of four verbal statements that describes what precedes, or will follow a cartoon situation (Cartoon Implications; O'Sullivan et al., 1965). The knowledge of experiencing possibly conflicting emotions in certain situations and understanding emotional chains (Changes Task) might also help test-takers to accomplish the Chapin SIT where solutions or explanations for given problems have to be identified. At a scale level, the SIT intends to measure the ability to evaluate others, to foretell what may occur in interpersonal and social situations, and the ability to rectify disturbing tensions or conflicts. Conceptually, this definition certainly contains the requirements of the scale definition of Branch 3 (Understanding Emotions), that is, the ability to understand emotional information, how emotions combine and progress through relationship transitions, and to reason about such emotional meanings.

Obviously, several abilities belonging to the emotional intelligence construct form a subset of those abilities belonging to the domain of social intelligence. This supports the early conceptualization of Salovey and Mayer (1990). As a matter of course, the last considerations only represent statements about the face validity of the compared tests and only with respect to the constructs as assessed by the given operationalizations. Any further going conclusions must

be subject to empirical investigations. Hence, at present, many questions concerning the overlap of social and emotional intelligence remain unanswered. For example, do the tasks with no corresponding social intelligence test assess a facet of emotional intelligence independent from social intelligence? That is, is emotional intelligence not only a subset of social intelligence, but contains distinct abilities? Or is it possible to regard social and emotional intelligence as constructs comprising the same cognitive requirements based on two different kinds of contents (social vs. emotional contents)?

10.6 CONCLUDING REMARKS

To conclude the chapter, we would like to provide some summarizing statements on the assessment of social intelligence, the associated problems and expected future challenges. Without repeating in detail future requirements as already outlined in this chapter, elements that appear most important for successful studies are (a) a theory-guided approach to the conceptualization of the construct with respect to higher- and lower-order facets and necessary task requirements, (b) the control of method-related variance (e.g., by MTMM-designs), and (c) the application of nonverbal and auditory task material to enhance real-life equivalence. When the construct can be conceptually delineated and adequately operationalized, examining the construct and finally predictive validity must be the focus of research. It appears inevitable for the conduct of useful studies to provide evidence for the convergent validity as an essential step for the establishment of a new ability construct (Süß, 2001). Moreover, it should be noted that the subfacets of a new hierarchical concept are in need of support by evidence of convergent validity. Last but not least, a discussion about the position of social and emotional intelligence within the field of individual differences research appears indispensable. In our view, it does not appear convincing to generate practical relevance only by the lexical introduction of new ability constructs. The apparent gold rush associated with the introduction and exploration of emotional intelligence might easily seduce researchers to adopt its importance from laypersons' theories without supporting the relevance by meaningful empirical evidence, especially for the convergent and incremental validity (Süß, 2001). In this respect, Schaie (2001) elaborates necessary steps towards the establishment of the emotional intelligence construct like a comprehensive convergent and discriminant validation, a well-founded selection of the validation sample, and the application of multivariate statistics for data analysis. Besides the already mentioned further duties as elaborated in this chapter, these methodological challenges might inspire researchers to come up with—as a seemingly overdue step—a book on social intelligence in the near future.

REFERENCES

Baltes, P. B., Staudinger, U. M., Maercker, A., & Smith, J. (1995). People nominated as wise: A comparative study of wisdom-related knowledge. *Psychology and Aging*, *10*, 155–166.

Barnes, M. L., & Sternberg, R. J. (1989). Social intelligence and decoding of nonverbal cues. *Intelligence*, *13*, 263–287.

Brown, L. T., & Anthony, R. G. (1990). Continuing the search for social intelligence. *Personality and Individual Differences*, *11*, 463–470.

Cantor, N., & Kihlstrom, J. F. (1987). *Personality and social intelligence*. Englewood Cliffs, NJ: Prentice Hall.

Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies*. New York: Cambridge University Press.

Chapin, F. S. (1942). Preliminary standardization of a social insight scale. *American Sociological Review*, *7*, 214–225.

Chapin, F. S. (1967). *The Social Insight Test*. Palo Alto, CA: Consulting Psychologists Press.

Costanzo, M., & Archer, D. (1993). *The Interpersonal Perception Task-15 (IPT–15)* [Videotape]. Berkeley, CA: University of California Extension Media Center.

Davies, M., Stankov, L., & Roberts, R. D. (1998). Emotional intelligence: In search of an elusive construct. *Journal of Personality and Social Psychology*, *75*, 989–1015.

Feldman, R. S., Tomasian, J. C., & Coats, E. J. (1999). Nonverbal deception abilities and adolescents social competence: Adolescents with higher social skills are better liars. *Journal of Nonverbal Behavior*, *23*, 237–249.

Ford, M. E. (1994). A new conceptualization of social intelligence. In R. J. Sternberg (Ed.), *Encyclopedia of human intelligence* (pp. 974–978). New York: Macmillan Publishing Company.

Ford, M. E., & Tisak, M. S. (1983). A further search for social intelligence. *Journal of Educational Psychology*, *75*, 196–206.

Frederiksen, N., Carlson, S., & Ward, W. C. (1984). The place of social intelligence in a taxonomy of cognitive abilities. *Intelligence*, *8*, 315–337.

Gardner, H. (1983). *Frames of mind: The theory of multiple intelligences*. New York: Basic Books.

Goleman, D. (1995). *Emotional intelligence: Why it can matter more than IQ*. New York: Bantam Books.

Gough, H. G. (1968). *Manual for the Chapin Social Insight Test*. Palo Alto, CA: Consulting Psychologists Press.

Guilford, J. P. (1967). *The nature of human intelligence*. New York: McGraw-Hill.

Guilford, J. P. (1981). Higher-order structure-of-intellect abilities. *Multivariate Behavioral Research*, *16*, 411–435.

Guilford, J. P. (1985). The structure-of-intellect model. In B. B. Wolmn (Ed.), *Handbook of intelligence. Theories, measurements, and applications* (pp. 225–266). New York: John Wiley & Sons.

Hendricks, M., Guilford, J. P., & Hoepfner, R. (1969). *Measuring creative social intelligence* (Psychological Laboratory Reports No. 42). Los Angeles: University of Southern California.

Jäger, A. O., Süß, H.-M., & Beauducel, A. (1997). *Berliner Intelligenzstruktur-Test* [Berlin Intelligence Structure Test]. Göttingen, Germany: Hogrefe.

Jones, K., & Day, J. D. (1997). Discriminations of two aspects of cognitive-social intelligence from academic intelligence. *Journal of Educational Psychology*, *89*, 486–497.

Keating, D. P. (1978). A search for social intelligence. *Journal of Educational Psychology*, *70*, 218–223.

Kihlstrom, J. F., & Cantor, N. (2000). Social intelligence. In R. J. Sternberg (Ed.), *Handbook of intelligence* (pp. 359–379). New York: Cambridge University Press.

Kosmitzki, C., & John, O. P. (1993). The implicit use of explicit conceptions of social intelligence. *Personality and Individual Differences*, *15*, 11–23.

Lee, J.-E., Day, J. D., Meara, N. M., & Maxwell, S. E. (2002). Discrimination of social knowledge and its flexible application from creativity: A multitrait-multimethod approach. *Personality and Individual Differences*, *32*, 913–928.

Lee, J.-E., Wong, C.-M. T., Day, J. D., Maxwell, S. E., & Thorpe, P. (2000). Social and academic intelligences: A multitrait-multimethod study of their crystallized and fluid characteristics. *Personality and Individual Differences*, *29*, 539–553.

Marlowe, H. A. (1986). Social intelligence: Evidence for multidimensionality and construct independence. *Journal of Educational Psychology*, *78*, 52–58.

Matthews, G., Zeidner, M., & Roberts, R. D. (2002). *Emotional intelligence: Science and myth*. Cambridge, MA: MIT Press.

Mayer, J. D., DiPaolo, M., & Salovey, P. (1990). Perceiving affective content in ambiguous visual stimuli: A component of emotional intelligence. *Journal of Personality Assessment*, *54*, 772–781.

Mayer, J. D., & Salovey, P. (1997). What is emotional intelligence? In P. Salovey & D. J. Sluyter (Eds.), *Emotional development and emotional intelligence: Educational implications* (pp. 3–31). New York: Basic Books.

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2002). *The Mayer, Salovey, and Caruso Emotional Intelligence Test: Technical manual*. Toronto, Canada: Multi-Health Systems.

Moss, F. A., & Hunt, T. (1927). Are you socially intelligent? *Scientific American*, *137*, 108–110.

Moss, F. A., Hunt, T., Omwake, K. T., & Woodward, L. G. (1955). *Manual for the George Washington University Series Social Intelligence Test*. Washington, DC: The Center for Psychological Service.

Orlik, P. (1978). Soziale Intelligenz [Social intelligence]. In K. J. Klauer (Ed.), *Handbuch der Pädagogischen Diagnostik* (pp. 341–354). Düsseldorf, Germany: Schwann.

O'Sullivan, M., & Guilford, J. P. (1966). *Six Factor Test of Social Intelligence: Manual of instructions and interpretations*. Beverly Hills, CA: Sheridan Psychological Services.

O'Sullivan, M., & Guilford, J. P. (1976). *Four Factor Tests of Social Intelligence: Manual of instructions and interpretations*. Orange, CA: Sheridan Psychological Services.

O'Sullivan, M., Guilford, J. P., & deMille, R. (1965). *The measurement of social intelligence* (Psychological Laboratory Reports No. 34). Los Angeles: University of Southern California.

Probst, P. (1982). Empirische Untersuchung zum Konstrukt der "sozialen Intelligenz" [Empirical investigation on the 'social intelligence' construct]. In K. Pawlik (Ed.), *Multivariate Persönlichkeitsforschung* (pp. 201–226). Bern, Switzerland: Hans Huber.

Riggio, R. E. (1986). Assessment of basic social skills. *Journal of Personality and Social Psychology*, *51*, 649–660.

Riggio, R. E. (1989). *Manual for the Social Skills Inventory*. Palo Alto, CA: Consulting Psychologists Press.

Riggio, R. E., Messamer, J., & Throckmorton, B. (1991). Social and academic intelligence: Conceptually distinct but overlapping constructs. *Personality and Individual Differences*, *12*, 695–702.

Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, *9*, 185–211.

Schaie, K. W. (2001). Emotional intelligence: Psychometric status and developmental characteristics—Comment on Roberts, Zeidner, & Matthews (2001). *Emotion*, *1*, 243–248.

Schneider, R. J., Ackerman, P. L., & Kanfer, R. (1996). To "act wisely in human relations": Exploring the dimensions of social competence. *Personality and Individual Differences*, *4*, 469–481.

Süß, H.-M. (2001). Prädiktive Validität der Intelligenz im schulischen und außerschulischen Bereich [The predictive validity of intelligence in the scholastic and non-scholastic domain]. In E. Stern & J. Guthke (Eds.), *Perspektiven der Intelligenzforschung* (pp. 109–136). Lengerich, Germany: Pabst Science Publisher.

Süß, H.-M., & Beauducel, A. (2005). Faceted models of intelligence. In O. Wilhelm & R. Engle (Eds.), *Handbook of understanding and measuring intelligence* (pp. 313–332). Thousand Oaks, CA: Sage.

Staudinger, U. M., Lopez, D. F., & Baltes, P. B. (1997). The psychometric location of wisdom-related performance: Intelligence, personality or more? *Personality and Social Psychology Bulletin*, *23*, 1200–1214.

Steele, C. M. (1997). A threat in the air: How stereotypes shape the intellectual identities and performance of women and African-Americans. *American Psychologist*, *52*, 613–629.

Sternberg, R. J. (1998). A balance theory of wisdom. *Review of General Psychology*, *2*, 347–365.

Sternberg, R. J., Forsythe, G. B., Hedlund, J., Horvath, J. A., Wagner, R. K., Williams, W. M., et al. (2000). *Practical intelligence in everyday life*. New York: Cambridge University Press.

Sternberg, R. J., & Smith, C. (1985). Social intelligence and decoding skills in nonverbal communication. *Social Cognition*, *3*, 168–192.

Stricker, L. J., & Rock, D. A. (1990). Interpersonal competence, social intelligence, and general ability. *Personality and Individual Differences*, *11*, 833–839.

Thorndike, E. L. (1920). Intelligence and its use. *Harper's Magazine*, *140*, 227–235.

Thurstone, L. L. (1938). *Primary mental abilities*. Chicago: University of Chicago Press.

Vernon, P. E. (1933). Some characteristics of the good judge of personality. *Journal of Social Psychology*, *4*, 42–57.

Wagner, R. K., & Sternberg, R. J. (1991). *Tacit knowledge inventory for managers*. San Antonio, TX: The Psychological Corporation Harcourt Brace & Company.

Walker, R. E., & Foley, J. M. (1973). Social intelligence: Its history and measurement. *Psychological Reports*, *33*, 839–864.

Weber, H., & Westmeyer, H. (2001). Die Inflation der Intelligenzen [The inflation of intelligences]. In E. Stern & J. Guthke (Eds.), *Perspektiven der Intelligenzforschung* (pp. 251–266). Lengerich, Germany: Pabst Science Publisher.

Wechsler, D. (1981). *Wechsler Adult Intelligence Scale—Revised*. New York: Psychological Corporation.

Wedeck, J. (1947). The relationship between personality and 'psychological ability'. *British Journal of Psychology*, *37*, 133–151.

Weinstein, E. A. (1969). The development of interpersonal competence. In D. A. Goslin (Ed.), *Handbook of socialization theory and research* (pp. 753–775). Chicago: Rand McNally.

Weis, S., & Süß, H.-M. (2004). *Social intelligence—Investigating its structure and construct validity in a multitrait-multimethod design.* Manuscript submitted for publication.

Wong, C.-M. T., Day, J. D., Maxwell, S. E., & Meara, N. M. (1995). A multitrait-multimethod study of academic and social intelligence in college students. *Journal of Educational Psychology*, *87*, 117–133.

Zeidner, M., Matthews, G., & Roberts, R. D. (2001). Slow down, you move too fast: Emotional intelligence remains an "elusive" intelligence. *Emotion*, *1*, 265–275.