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The role of students' personality characteristics, self-perceived competence and learning conceptions in the acquisition and development of social communicative competence:
A longitudinal study

A.W.E.A. BAKX[1], J.M.M. VAN DER SANDEN[1,2,3], K. SIJTSMA [3], M.A. CROON[3] & Y.J.M. VERMETTEN[4]
[1]*Fontys University of Professional Education, Eindhoven, The Netherlands;* [2]*Eindhoven University of Technology, Eindhoven, The Netherlands;* [3]*Tilburg University, Tilburg, The Netherlands;* [4]*Open University, Educational Technology Expertise Centre (OTEC), Heerlen, The Netherlands (E-mail: a.bakx@fontys.nl)*

Abstract. An important purpose of higher social work education is to guide students to acquire and develop social-communicative competencies. The purpose of this study was to investigate the role students' personality characteristics, self-perceived communicative competence and learning conceptions play in the acquisition and development of social-communicative competencies. We designed and tested a hypothetical model on the student-related variables – self-perceived communicative competence, learning conceptions and reported learning activities regarding communication – in relation to performance scores. We were interested in developmental trends in the above mentioned variables. We also wanted to gain insight into the relationships among the variables. The study was set up according to a longitudinal, within-subjects design in order to study intra-individual changes. One-hundred and twenty-three first-year social-work students participated in this study. Many changes were found in students characteristics, reported deployed learning activities and study results during their first academic year. Except for confidence in "showing sympathy", which was already relatively high at the beginning of the study, all scores on aspects of students' self-perceived social-communicative competence increased. Assessment scores on comparable communication tests also increased significantly. Extraversion and emotional stability were the only two personality characteristics, which seemed rather stable. Agreeableness *decreased* while autonomy increased continuously during the first academic year. It seemed to be possible to set up a model, which may serve as a *starting point* for further research into the development of social-communicative competence.

Keywords: competence development, learning conceptions, model on learning, personality characteristics, social-communicative competence.

Introduction

An important purpose of higher social work education is to support students in the process of acquiring and developing social-communicative competencies, because these competencies play a major role in the

field of social work (Winkelaar 1998). Social-communicative compe-
tence is defined as an interrelated structure of knowledge, skills, a
professional attitude and learning abilities in the field of professional
communication (Bakx 2001).

Many studies on student learning in higher education highlight the
major influence of students' conceptions of learning on their learning
behaviour (Marshall et al. 1999). During the last two decades the interest
in learning conceptions, learning styles, and quality of learning processes
has increased in education in general and health profession education in
particular (Curry 1983). As a result, many studies on (general) learning
styles were conducted (Curry 1983; Burwell 1991; Furnham 1992; Jack-
son and Lawty-Jones 1996; Vermunt 1996; Busato et al. 1999; Slaats
et al. 1999). These studies focus on *general* learning styles, assuming that
learning is a relatively general process that operates in the same way
across different content domains (Wolters and Pintrich 1998). However,
the way students approach learning may vary for different content do-
mains (Stodolsky et al. 1991; Prosser et al. 1996; Vanderstoep et al. 1996;
Marshall et al. 1999). Therefore, it is important to take the domain into
account when studying learning conceptions and related variables. From
our interest in the development of social-communicative competencies,
we chose a domain-related perspective. This choice differs in two ways
from the majority of studies on learning conceptions and learning styles.
First, other studies address learning styles in general without referring to
a specific domain, like history or science (Marton and Säljö 1976; Kolb
1984; Schmeck and Geisler-Brenstein 1989; Vermunt 1996; Busato et al.
1999). Second, most studies on learning conceptions and learning styles
are often about academic, or knowledge-oriented, ways of learning. Our
study takes a competence perspective rather than a knowledge-oriented
perspective, and pertains to the field of communication.

Students conceptualise their study and learning activities in distinct
and different ways; teachers may not be aware of this, but these con-
ceptions have important implications for both teaching and learning
(Light 2002). It was also found that conceptions of teaching influence
teachers' teaching strategies, which in turn influence students' ap-
proaches to learning (Ho et al. 2001). Students' views and ideas on
learning play a crucial role, and it is essential to take these into account
to optimise learning (Pintrich et al. 1993).

Both previously acquired knowledge structures and personal concep-
tions and beliefs on knowledge and learning play an important role in the
ways students approach learning (e.g. Pintrich et al. 1993). In this study,
quite a few variables were examined, regarding students' conceptions in

relation to (the acquisition of) social-communicative competence. One of the goals of this study was to explore these (related) conceptions, the possible development of these conceptions during the first study year in higher social work education, and to inform the teachers about these findings. The gap between staff expectations and student conceptions might be bridged in a way that teachers can adapt their teaching to the (desired) students' conceptions and so optimise their teaching practises. We wanted to increase our understanding of the role students' characteristics play in the acquisition and development of social-communicative competencies.

We designed and tested a hypothetical model on students' personality characteristics, self-perceived communicative competence, learning conceptions and reported learning activities regarding communication, in relation to performance scores. The study was set up according to a longitudinal, within-subjects design in order to study intra-individual changes and to exclude generation effects. We were interested in developmental trends in the above mentioned variables, Next, we wanted to gain insight into the relationships among the variables. More specifically, the two research questions were:

1. Which within-students developments in personality traits, self-perceived communicative competence, learning conceptions, reported learning activities, and assessment scores take place over a period of one study year?
2. How are personality traits, self-perceived communicative competence, learning conceptions, reported learning activities, and assessment scores (measured at the end of the year) related? Do these finding support the model, we introduced and investigated in this study.

The following part describes the variables studied. This is a brief overview of a series of studies, which was done previously to the study described in this article. Next, a few (domain-related) models on student learning are briefly described. Parts of these models were integrated into a new, hypothetical model on student-related variables regarding learning in the field of communication, which is described in the last section.

Students' characteristics: Previous studies

Personality traits

Students' personality characteristics were included in this study, because these are assumed to influence learning (Busato et al. 1999). Personality

traits possibly play an even more important role in acquiring social-communicative competencies than in, for example, acquiring technical skills, as in the latter the involvement of the subject as a person is less obvious. Personality produces consistencies in behaviour across different contexts. Differences in personality cause individuals to react to learning situations in their own ways (Carver and Scheier 1992).

It is assumed that personality consists of five superordinate factors, referred to as the 'Big Five' (Carver and Scheier 1992; Mervielde 1992). The Big Five personality characteristics are extraversion, agreeableness, conscientiousness, emotional stability and autonomy. Extraversion is about being talkative, cheerful, active, energetic and vigorous. Agreeableness refers to being friendly, flexible and co-operative. Conscientiousness is about being thorough, task-orientated, systematic and careful. Emotional stability refers to being calm and relaxed, having emotional control. There has been a lot of discussion about the meaning of the fifth factor (De Raad and Van Heck 1994). It has emerged under a range of divergent names and accompanying interpretations, such as "culture" and "intellect" (Trapnell 1994). In our study, we used the Dutch version of the FFPI to measure personality characteristics, emphasising autonomy (Hendriks 1997). At a conceptual level the fifth factor resembles openness to experience (e.g., NEO-PI). This has to do with the operationalisation of the construct in items. Autonomy is about being creative, intelligent, imaginative, autonomous and independent decision making (see e.g., Goldberg 1992; Hendriks et al. 1999). Extraversion, conscientiousness and autonomy are often found to be the most relevant in relation to learning processes (De Raad and Schouwenburg, 1996). In a previous study with 340 social work students, we found positive correlations between sell-perceived social-communicative competencies and extraversion, autonomy and emotional stability (Bakx et al. 2002)

Self-perceived social-communicative competence

In many studies, self-perceived communicative competence, or self-efficacy, is found to be an important predictor of performance (Bandura 1986; Kunnen 1993; Rossum and Vermeer 1994; Johnson 1998). The view students have on their own competencies, plays a major role in motivation, choice of learning activities, test anxiety, goal setting and learning results (Weinstein and Mayer 1986; Dweck and Leggett 1988; Boekaerts and Seegers 1994). Self-perceived communicative competence

is task-specific, implying differences across domains of learning (Pintrich et al. 1993; Wolters and Pintrich 1998).

In a previous study, we developed and validated questionnaires to measure students' self-perceived competencies, learning conceptions and preferences for learning situations, all within the domain of communication (Bakx et al. 2003). Five indicators were found with regard to self-perceived social-communicative competence: structuring a conversation, showing empathy, opening a conversation, being assertive and grilling (asking questions to further explore certain issues). In this study, we also used these aspects as indicators of students' self-perceived social-communicative competencies.

Domain-related learning conceptions

Learning conceptions play a major role in the ways students approach or avoid instructive situations (Marton and Säljö 1976; Weinstein and Mayer 1986; Dweck and Leggett 1988; Marton et al. 1993; Chiou 1995; Vermunt 1996). General inventories are not tuned to the specific area of communication. These needed to be redeveloped in order to measure students' approaches to learning with regard to social-communicative competencies (Kember et al. 1999). As mentioned, in our previous studies, we developed a questionnaire which measures learning conceptions (Bakx et al. 2003). In the next paragraph, we deal with the theoretical background of this questionnaire and describe the way it was constructed.

In other research, two general learning conceptions are often found: a constructivistic and a reproductive learning conception. In a constructivistic view on learning, the emphasis is on knowledge building and competence development as a personal responsibility of the learner. A reproductive learning conception focuses on the intake of information for fact retention (Vermunt 1996; Slaats et al. 1999). Vermunt (1998) found three other learning conceptions: learning by using knowledge, learning as being stimulated by the educational environment and learning by co-operation with other students. The latter two might also be considered as (favoured) learning situations or as desirable aspects of the learning environment (Slaats et al. 1999). We see "learning as being stimulated by the educational environment" and "learning by co-operation with other students" as instructional conceptions or preferences, while the other three are learning conceptions. The conception of learning by using knowledge emphasises the practical value of acquired

knowledge and experiences. Such a conception seemed relevant for our study because the domain of communication is quite application-oriented by itself.

Stodolosky et al. (1991) conducted an interview study with 60 students concerning their conceptions of learning math and social studies. Students showed distinct individual views on math and social studies, respectively, and they had different opinions on learning each subject. These different domain-related learning conceptions could be explained by the different views students had on the meaning of the subjects, the affect associated with the two subjects and the way the students were taught (Stodolsky et al. 1991). This indicates again that the nature of the subject influences students' views on instructional effectiveness of learning activities with regard to the domain.

Prosser et al. (1994) state that learning conceptions in the field of science can be very different from learning conceptions in the field of history. They found five learning conceptions with regard to science: two of these were externally oriented: learning as accumulating more information to satisfy external demands and learning as acquiring concepts to satisfy external demands. The other three conceptions were internally oriented: learning as acquiring concepts to satisfy internal demands, learning as conceptual development and learning as conceptual change (Prosser et al. l994).

In our previous study (Bakx et al. 2003), we expected to find both an application-oriented learning conception, and the often found distinction between the reproductively and constructivisticly oriented learning conceptions. We used two Dutch learning style questionnaires: Vermunt's questionnaire for academic learning styles (1992) and Slaats' questionnaire (1999) on learning styles in the field of vocational education and training. We used their items and translated these into the specific domain of views on learning how to communicate.

Principal components analyses ($n = 397$) revealed four communication-related learning conceptions (see for details Bakx et al. 2003): a text-based reproductive learning conception, a model-based reproductive learning conception, a constructive learning conception and a pragmatic learning conception. A text-based reproductive learning conception is characterised by the view of learning as remembering sentences and phrases for retention, A model-based reproductive learning conception emphasises copying information and observed behaviour in practical situations for retention without much personal input. A constructive learning conception refers to processing information in a meaningful way to build up an adequate personal action

theory by elaborating and reflecting on personally acquired knowledge and competencies. A pragmatic learning conception refers to the view of acquiring social-communicative competence by selecting, storing and using information from a utilitarian perspective, without actively looking for new information or taking initiatives. This study also showed that self-perceived social-communicative competence and these ''new'' learning conceptions predict preferred learning situations. In the following sections, we discuss our approach for assessing learning activities and the level of competence in previous studies.

Learning activities in the context of communication

We consider deploying learning activities as being involved in instructive situations, which lead to experiences and behaviour from which one can learn. As a consequence, learning activities are not restricted to ways of information processing and learning strategies in school contexts. Indeed, reading books, attending lectures and talking to experts are examples of learning activities, but learning often takes place in situations that were not explicitly designed to acquire certain competencies (Lave and Wenger 1991). Communication is always imbedded in contexts, in which individuals interact (O'Hair et al. 1995), and as a consequence, students probably encounter more instructive *informal* communicative situations than formal communicative learning situations. Informal learning is a natural form of learning, in which students learn more or less spontaneously and without much conscious effort (Boekaerts and Minnaert 1999), whereas formal learning activities are organised as part of the curriculum and initiated by the educational organisation. Informal learning activities are more authentic, and situated in a natural context (Brown et al. 1989; Reigeluth and Schwart 1989; Onstenk 1997).

Again, briefly the theoretical background and construction of the development of the questionnaire used are described. Based on literature research and a pilot study (Bakx et al. 2002) three dimensions of learning situations were used in constructing the questionnaire. The first dimension is the preference for abstract or concrete information, the second dimension refers to, learning from experiences versus learning by observing (Bandura 1986, 1989) and the third dimension concerns the organisation of learning: ''formal versus informal learning'' (Marsick 1987). These first two dimensions were grounded in Kolb's experiential learning-theory (1984). Regarding to the third dimension, it was

assumed that learning how to communicate often takes place in situations that were not explicitly designed to acquire certain competencies (Lave and Wenger 1991). Informal learning is a natural form of learning, in which students learn more or less spontaneously and without much conscious effort (Boekaerts and Minnaert 1999). We assumed this informal learning should play a role in the learning process of communication.

Based on principal component analyses ($n = 340$), five instructive situations were found: informal learning, learning during traineeships, in particular, observational activities (see also, Bandura 1986), learning from information sources (compare Zimmerman and Martinez-Pons 1988), role-play learning (see also, Holsbrink-Engels 1998), and learning from consulting experts (cf. Zimmerman and Martinez-Pons 1988; for details see Bakx 2001).The last four learning situations are more formally organised, in contrast to informal learning.

In the study described here, the interest was not specifically on examining the kind of learning situations students get involved in, but on investigating the level of achieved competence, which results from these encounters: when insight has been gained in deployed learning activities and the learning results these activities lead to, it becomes possible to influence students' learning activities to stimulate successful learning behaviour.

Performance and assessment of social-communicative competences

The level of achieved competence can be assessed by observing student performance in communicative situations, related to the future professional context of social workers. Much research has been done in the field of assessment of communication (Eisler 1976; Bellack 1979; Canale and Swain 1980; Schlundt and McFall 1985; Gotjamanos 1996; Smit and Molden 1996; Holsbrink-Engels 1997; Issenberg et al. 1999). A desirable strategy for assessing social-communicative competence is by direct observation in the natural environment or work settings which, however, may prove to be impractical or impossible. As a consequence, paper-and-pencil tests, self-report inventories and role-play tests have been developed (Bellack 1979). We chose to use three different kinds of tests to measure social-communicative competence. The first two tests have been used within social work education for many years: a paper-and-pencil test measuring knowledge and analytical skills concerning communicative situations, and a skills-oriented role-play test. The third

test, a multimedia test with digital video had been developed especially for this research project, measuring professional attitudes, knowledge and communication-related cognitive skills (Bakx et al. 2002).

In this multimedia assessment, video fragments were used of social workers communicating in 10 different professional contexts. The video fragments refer to different authentic contexts, which are related as closely as possible to the real professional environment (Brown et al. 1989; Reigeluth and Schwartz 1989), and represent different kinds of professional situations (Eisler 1976; Hannafin and Land 1997), and positive and negative role models (Baldwin 1992). Assessment in the form of questions was offered. Students were confronted with "triggering" and guiding questions, which were assumed to be beneficial for the learning process as well (Cennamo 1994). Examples of questions are: "What kind of question should you ask at this moment?", "What is a correct professional response?" (skills), and "What is non-verbal behaviour?" (knowledge). Open-ended questions were added, asking for reflection on the presented communicative situations and on the students' own behaviour in similar situations (Holsbrink-Eingels 1997). In the version of the multimedia test used for this study, no feedback was presented; the students completed the test in the presence of a researcher and were not allowed to co-operate. For more details about the development and validation of the multimedia test, see Bakx et al. (2002). In the present study, the three tests were combined in order to measure the students' overall performance level of social-communicative competence.

Towards an integrated hypothetical domain-related model for the development of competence

The literature on domain learning does not describe a model that integrates personality characteristics, domain-related (learning) conceptions and related performance, in particular when it comes to the acquisition of social-communicative competence. Alternatively, we examined general models on learning, and integrated three models into one more comprehensive model on learning how to communicate.

Alexander et al. (1995) proposed a model of domain learning that describes three developmental stages in academic learning. In this model, domain learning develops from the acclimatisation stage to the competence stage and finally reaches the expertise stage. In the acclimatisation stage students start learning about a new content domain.

They show low interest, have little domain knowledge and use strategies inflexibly. In the competence stage students become more interested, develop more knowledge about the domain and use their strategies more effectively. In the last stage, students use their competencies at a fully grown level. We assume that student-related variables, as investigated in our study, play an essential role in the development of social-communicative competencies in all three stages in Alexander's model of domain learning.

Curry (1983) proposed a model for the organization of learning styles. An "onion" was used as a metaphor. The inner layer of the onion refers to the learner's cognitive personality style (which is relatively stable), the next layer represents a learners's information processing style, and the outer layer refers to the student's instructional preferences. This model is based on two underlying assumptions. First, it is assumed that personality determines a learner's information processing style; whereas cognitive personality styles and information processing styles influence the learner's instructional preferences. The second assumption is that the inner layers are relatively stable compared to the outer layers. This is plausible, because of the interaction of the outer layers with varying instructive situations.

Spencer and Spencer (1993) used an iceberg metaphor to visualize competencies. The iceberg model exists of five components. Motives, traits (personality) and self-concept form the base of the iceberg. These layers are believed to be hidden. The upper two layers refer to skills and knowledge, which are more visible. In our definition, skills and knowledge are part of competencies and can be acquired and developed.

In our model, we integrated the three perspectives described above. When starting their social work education, students are assumed to be in the acclimatisation stage described by Alexander et al. (1995). We assumed that social work students may enter the competence stage at the end of their first year. Our model on the acquisition of social-communicative competence concerns the acclimatisation and the competence stages, but not the expert stage. Like Curry (1983) and Spencer and Spencer (1993), we assumed that personality plays an important role in competence development. As mentioned above, we assumed that personality plays an even more important role in acquiring social-communicative competencies than in, for example, acquiring technical skills, as in the latter the involvement of the subject as a person is less prominent. We found personality characteristics to be a major influence on self-perceived social-communicative competencies (Bakx et al. 2002).

For our model, we adopted Spencer and Spencer's (1993) iceberg metaphor. In our view, personality characteristics form the basis of the iceberg. The second layer is formed by self-perceived social-communicative competence, and the third layer consists of domain-related learning conceptions. These three "not directly observable" layers are followed by two more observable variables: students' learning activities and students' learning results. We assumed that students' personality characteristics influence their self-perceived social-communicative competence, which in turn influences their learning conceptions about the acquisition of social-communicative competencies. Students' personality characteristics, self-perceived competencies and learning conceptions together probably are important determinants for the learning activities students deploy and avoid, which in turn leads to learning results (assessment scores). Figure 1 presents our model. Like Curry (1983) and Spencer and Spencer (1993) we hypothesise that personality is the most stable layer of the pyramid and that the higher layers are both more visible and open to change and development.

Method

Participants

One-hundred and twenty-three first-year social-work students from a Dutch university of professional education participated in this study.
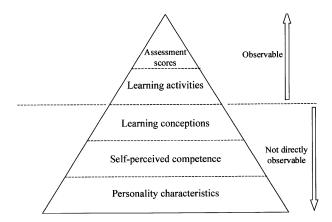

Figure 1. Hypothetical model of related variables in the acquisition of social-communicative competencies.

They participated obligatorily as part of their curriculum. The greater part of the total group consisted of women: 91% were women and 9% were men. This ratio of females and males is representative of the Department of Social Work. The average age of the sample was 18 years. The students were all first-year, full-time social work students, enrolled in a four-year higher vocational educational programme. Almost all social work graduates start their careers in the field of social work. A social worker can be employed as an activity coach, a mentor, a youth coach, a counsellor, a pedagogic employee, a sociotherapist, and so on (Vaalburg et al. 1997).

Students start their social work education when they are 17 or 18 years old and have the proper certificates to start higher education. As a rule, students work in groups of about 25 students. Each group is coached by a teacher. Students attend classes and workshops, and work on assignments in small groups of six to eight persons. In the first academic year, they start their first semester with classes, assignments, and training. In the second semester, each student attends a traineeship, during half a day in every week for half a year. Students observe social workers and work on assignments individually. Students also start practising in communicative situations with clients, with a personal trainer taking care of supervision. In their third academic year, they attend full-time traineeships and in the fourth and last year, they work in small groups on two graduation assignments.

Materials

Four questionnaires were used. The first questionnaire assessed five aspects of self-perceived communicative competence: opening a conversation, structuring a conversation, grilling, showing empathy and being assertive during a conversation. A list of 41 communicative skills for social workers was used (Bakx et al. 2003). Students responded to each item using a five-point Likert scale ranging from (l) "I' m bad at this" to (5) "I'm good at this". Table 1 presents the scales, the number of items, the reliabilities, and examples of items. The questionnaires were completed three times; therefore, three reliability coefficients are reported.

The second questionnaire measured domain-related learning conceptions by means of 27 items about views on learning how to communicate (Bakx et al. 2003). These items represented four domain-related learning conceptions: a constructive learning conception, a

pragmatic learning conception, a text-based reproductive learning conception and a model-based reproductive one (see also Table 1). Students were asked to indicate on a five-point rating scale the degree to which the statement corresponded to their own view. The scale varied from (1) "I think this is a bad way to learn how to communicate" to (5) "I think this is a good way to learn how to communicate", in response to, for example "Learning by heart every phrase of a text on, for example, passing bad news".

The third questionnaire was about reported learning activities (see Table 1). Twenty-five communication-related learning activities were presented, arranged in five scales, measuring role-play learning, informal learning, learning from information sources, learning from consulting experts and learning during traineeships. A five-point Likert scale was used to indicate the frequency of performed learning activities. The scale varied from (1) "I hardly ever do this" to (5) "I almost always do this". For the assessment of personality-characteristics the Dutch version of the five factor personality inventory (FFPI) was used (Hendriks 1997; Hendriks et al. 1999). This questionnaire composed 100 statements. Students indicated on a five-point rating-scale to what extent the statement was descriptive of his or her personality (for examples, see Table 1). This scale varied from (1) "this does not apply to me at all" to (5) "this applies to me totally". Factor scores were used for analyses, according to the instructions specified in the test manual.

For the assessment of social-communicative competence three tests were used, as described above: a multimedia test, a role-play test and a paper-and-pencil test. For all three tests percentage-scores were used. Results of these three tests were combined to obtain an overall picture of students' performance in the field of communication.

Procedure

The students completed the questionnaires on learning conceptions, self-perceived communicative competence and personality and the multimedia test three times: (1) at the start of their education, (2) after the first semester, and (3) at the end of their first year. The learning activities deployed by the students, however, were registered only the second and the third time, because at the first measurement moment students had not taken any courses yet. After completing the questionnaires the students started the multimedia assessment. At the first and second measurement, the students were confronted with the

Table 1. Scales of self-perceived communicative competence, learning conceptions, reported learning activities and personality traits, number of items, reliabilities, and examples of items

Scale	Cronbach's alpha			Items	Item example
Self-perceived social-communicative competence					
Structuring a conversation	0.82	0.77	0.85	10	Selecting conversational themes
Showing empathy	0.77	0.80	0.84	9	Showing understanding
Opening a conversation	0.79	0.80	0.82	5	Getting into contact
Being assertive during a conversation	0.78	0.74	0.79	9	Clarifying boundaries
Grilling	0.81	0.81	0.84	8	Requesting specification
Learning conceptions about how to learn to communicate					
Constructivistic learning conception	0.80	0.91	0.93	8	Observing fellow-students' actions during traineeships and seeing if you would do the same in similar situations
Text-based reproductive learning conception	0.71	0.72	0.73	3	Learning by heart every phrase of a text on, for example, passing bad news
Model-based reproductive learning conception	0.89	0.91	0.93	8	Copying effective sayings and phrases from professionals word by word, in order to use them in a similar context
Pragmatic learning conception	0.66	0.62	0.66	8	Deducting general approaches from other peoples behaviour
Reported learning activities					
Role-play learning	0.71	0.67	0.68	5	Practising role-plays in school

Informal learning	0.74	0.78	0.77	5	Asking friend's opinions on your way of communicating with others
Learning from information sources	0.73	0.73	0.77	5	Reading specific material on recorded professional counselling-interviews
Learning from consulting experts	0.75	0.76	0.58	5	Asking your teacher how to express yourself in a particular situation
Learning during traineeships	0.72	0.72	0.69	5	Practising the application of counselling techniques with clients during traineeships
Big five personality traits					
Agreeableness	0.78	0.73	0.79	20	I take others interests into account
Conscientiousness	0.82	0.78	0.82	20	I do things according to a plan
Extraversion	0.83	0.84	0.86	20	I love to chat
Autonomy	0.79	0.80	0.82	20	I can easily link facts together
Emotional stability	0.82	0.86	0.88	20	I can take my mind of my problems

same multimedia test. At the third measurement, students received a comparable multimedia test. This was done to prevent memory effects (Eysenck and Keane 1994). The construction, validity, comparability and reliability of these two multimedia tests was object of an other study (for details see also Bakx et al. 2002). Students' grades on the role-play test and the paper-and-pencil test were retrieved from institutional files. Students had to participate in these two tests as part of their regular curriculum. These two test were only offered once, at the end of their first year programme. The multimedia test, however, was offered three times during the first study year. The students did not receive any feedback on the questionnaires or the tests.

Data analyses

The analyses were performed on data of students who completed all questionnaires and the assessment during the three measurement moments. In total, 123 cases were analysed. The results on the multimedia tests were compared (for three assessments). The other two tests (the paper-and-pencil-test and the roleplay test) were only administered once, and as a consequence, could not be compared with equivalent test results.

First, mean scores were calculated. The scores on the personality scales were transformed into factor scores. Next, a within subjects ANOVA was performed to test for differences in self-perceived competencies, learning conceptions, reported learning activities, personality traits and assessment scores over the first academic year. Based on the data of the third measurement, structural equation modeling, by means of the computer program AMOS 3.6, was used to analyse the relations between the measured variables (Boomsma 2000). The analyses were based on a covariance matrix. Estimates were obtained by means of the maximum likelihood method. A tentative initial model was specified, based on theoretical considerations and on the findings in the correlation matrix (see Appendix 1). The initial model was tested and modified. Statistical and theoretical considerations served as criteria for improving the model. To evaluate the model multiple fit indices were used. In addition to Chi-square as a measure of overall fit, the GFI, IFI, CFI and RMR were also used (Boomsma 2000). These are fit-indices, which provide non-redundant information about the validity of the statistical model.

Results

*Developments in personality traits, self-perceived communicative compe-
tence, learning conceptions, reported learning activities and assessment
scores*

Results of the multiple analyses of variance are presented in Table 2.
First, students' scores at the first measurement moment were compared
with their scores at the second measurement moment. Next, students'
scores averaged across the first and second measurement moments were
compared with those at the third measurement moment. Except for
"showing empathy", the scores on all other aspects of self-perceived
social-communicatve competence increased significantly from the
beginning of the academic year to the end of the first semester. Results
indicated that the first-year students became more secure about their
social-communicative competencies after the second semester.

In the beginning of the academic year, first-year students scored
highest on the constructivistic and the pragmatic learning conceptions
and lowest on the two reproductive learning conceptions. After the first
semester, the scores on the constructivistic and pragmatic learning
conceptions decreased significantly. These scores remained at the same
level. The scores on the text-based reproductive learning conception did
not change significantly after the first semester, but increased signifi-
cantly after the second semester. No changes were found with regard to
the model-based reproductive learning conception.

Results indicated three changes regarding reported learning activities
after the second semester. The students reported more informal learning
activities after the second semester than they did before. Learning from
experts and learning during traineeships also increased. No significant
differences were found with respect to learning from information
sources and role-play learning.

Three out of five personality traits changed during the first academic
year. Agreeableness decreased after the first semester and decreased
even more after the second semester, while autonomy increased after the
first semester and increased further after the second semester. The scores
on conscientiousness became significantly lower after the first semester
and remained at the same level after the second semester. Extraversion
and emotional stability appeared to be rather stable personality traits
during the first academic year.

Assessment scores on the multimedia test on communication were
significantly higher after the first semester and increased even further

Table 2. Analysis of variance for measures concerning self-perceived communicative competence scales, learning conceptions, reported learning activities, personality traits and assessment scores

Variable	Mean			F	t	t
	Measurement			$(df = 122)$	1 versus 2	1 + 2 versus 3
	1	2	3			
Self-perceived competence						
Structuring a conversation	3.74	3.82	3.92	11.78**	2.46*	4.13**
Showing emphathy	4.48	4.46	4.50	1.04	−0.63	1.27
Opening a conversation	3.99	4.32	4.33	40.30**	7.07**	5.34**
Being assertive	3.68	3.82	3.85	8.39**	3.12**	2.70**
Grilling	3.94	4.04	4.09	6.95**	1.98*	3.40**
Learning conceptions						
Constructivistic	4.49	4.33	4.32	7.95**	−3.54**	−1.95
Text-based reproductive	2.93	2.84	3.07	6.23**	−1.21	3.11**
Pragmatic	3.86	3.71	3.76	5.69**	−3.30**	−0.29
Model-based reproductive	2.26	2.19	2.19	0.67	−1.01	−0.62
Reported learning activities						*t2 vs. t3*
Informal learning		3.01	3.14	4.10*		2.02*
Learning from info. sources		2.32	2.42	2.11		1.45
Learning from experts		2.93	3.18	12.50**		3.45**
Learning during traineeships		3.45	3.61	8.72**		2.95**
Role-play learning		4.05	4.01	2.08		−1.44
Personality traits						
Extraversion	1.99	1.95	1.86	0.18	0.26	−0.52
Agreeableness	2.45	2.28	2.18	7.51**	−2.82**	−2.68**
Conscientiousness	1.08	0.75	0.80	9.45**	−4.34**	−1.62
Emotional stability	1.53	1.46	1.53	0.67	−1.17	0.27
Autonomy	1.26	1.43	1.44	6.52**	2.83**	2.34*
Assessment scores						
Multimedia test	34	38	56	260.99**	3.71**	22.89**

*$p < 0.05$; **$p < 0.01$.

after the second semester. Thus, as expected, social-communicative competence increased during the first academic year.

Structural equation analysis

First, based on theoretical considerations and on the covariance matrix, we chose to reduce the number of variables, in order to find a parsimonious model. Two personality characteristics, emotional stability and extraversion, were omitted from the model, because these were not strongly related to the other variables. For self-perceived communicative competence, we constructed one score for each student, based on the student's mean score on the aspects of self-perceived communicative competence grilling (Cronbach's $\alpha = 0.84$), assertiveness (Cronbach's $\alpha = 0.79$), and structuring a conversation (Cronbach's $\alpha = 0.85$). These three subscales were highly intercorrelated. Reliability (Cronbach's α) of the items of the combined subscales was 0.92. We used two learning conceptions, the constructive learning conception and a reproductive learning conception, because they cover the two theoretically most interesting constructs and refer to a distinction that is quite common in the literature. Therefore, scores on the text-based reproductive learning conception (Cronbach's $\alpha = 0.73$) and the model-based reproductive learning conception (Cronbach's $\alpha = 0.93$) were arranged into a mean score for each student to obtain a score on a general reproductive learning conception. Cronbach's-α of this "general reproductive learning conception scale" was 0.91.

The results from the structural equation analysis indicated that learning from information sources and role-play learning did not contribute significantly to the model. As a consequence, these two variables were omitted. The variables "learning from consulting experts" (Cronbach's $\alpha = 0.58$) and "learning during traineeships" (Cronbach's $\alpha = 0.69$) were taken together based on theoretical considerations, and because they correlated highly *(r = 0.64)*. Cronbach's α of this new scale was 0.77.

Non-significant paths were omitted from the model. Paths were added when modification indices were high and the suggested relations could be theoretically explained. Figure 2 presents the final model. It is a recursive model, without correlated error terms. Fit indices of this model were: $\chi^2/df = 1.59$ and $p = 0.06$; GFI $= 0.96$; RMR $= 0.058$; IFI $= 0.96$ and CFI $= 0.96$.

Description of the structural model

Conscientiousness and agreeableness were positively related (0.19). Paths ran from all three personality characteristics to the two learning conceptions. Conscientiousness directly affected the reproductive learning conception (0.23) and the constructive learning conception (0.13) positively. Autonomy and agreeableness had a positive effect on the constructive learning conception (0.30 and 0.22, respectively) and a negative effect on the reproductive learning conception (−0.17 and −0.37, respectively).

Two direct paths ran from personality characteristics to assessment scores. Conscientiousness (0.18) and agreeableness (−0.21) had a direct effect on assessment scores. No direct path ran from autonomy to assessment scores. Autonomy had a direct effect on self-perceived social-communicative competence (0.44), which in turn affected the constructive learning conception (0.23) and traineeships (0.20).

A path ran from the constructive learning conception to learning during traineeships (0.32). The constructive learning conception also had a direct effect on assessment scores (0.45). The reproductive learning conception did not affect learning activities or assessment scores.

Agreeableness had a direct effect on traineeships (−0.22) which itself had a direct effect on assessment scores (−0.23). Another direct path ran from conscientiousness to informal learning (−0.12). Informal learning had no direct effect on assessment scores.

Discussion

Within-students developments

This study was set up according to a longitudinal, within-subjects design in order to study intra-individual changes in both students' personality characteristics and conceptions and performance in the field of communication. Longitudinal studies are appropriate to investigate developmental trends in learning and thinking (Entwistle and walker 2000). These kinds of studies are scarce (Vermetten et al. 1999), but worth the effort.

During their first academic year many changes took place in students' personality traits, self-perceived communicative competence,

learning conceptions, reported learning activities and assessment scores. Except for "showing empathy", which was already relatively high at the beginning of the study, all scores on aspects of students' self-perceived social-communicative competence increased during the first academic year. It is likely that students' self-perceived competencies are in line with their competence level, as measured by performance tests. Increases in actual competencies during the first academic year may have led to increases in self-perceived social-communicative competencies (Metz et al. 1997). Next to this, students initially based their self-perceived social-communicative competence on the view they have on their habitual ways of interacting with others. These everyday interactions served as their primary frames of reference, because they had not been trained formally in communication before they started their social work education. However, after attending training and instruction they developed competencies to judge their own social-communicative competence more appropriately. They probably had developed more detailed criteria to do so.

Although, we hypothesized, as Curry (1983) and Spencer and Spencer (1993) did, that personality characteristics would be relatively stable in comparable contexts, extraversion and emotional stability were the only characteristics for which our expectations were confirmed. Agreeableness decreased, while autonomy increased during the first academic year. Conscientiousness decreased after the first semester. During the first academic year many changes took place in the students' lives (Asselbergs et al. 1994), because the got enrolled in a new educational program offered by a large educational institute. Many students lived at home with their parents at the start of this new program and moved to students' livings during the first year. Approximately, 10% of the students dropped out. All these changes might influence the way students view the world around them and possibly the way they view themselves. Students' learning conceptions changed, but the constructivistic and pragmatic learning conceptions were favoured most during the whole first year. The growing preference for the text-based reproductive learning conception after the second semester might be explained by the social work assessments. Assessment on social-communicative competence is important, but also time-consuming and expensive (Smit and Van der Molen 1996). As a consequence, assessment of social-communicative competence is brought back to a minimum and is predominantly summative. Summative assessment procedures may influence the learning activities students deploy considerably (Tait 1998). Students can gain satisfying results on the

knowledge tests by reproducing textual information. This might encourage them to memorise and, as a consequence, they tend to view learning as a more (text-based) reproductive set of activities. However, reproductive learning behaviour is not sufficient to gain good results on the other assessments. This could explain why students also view learning from a constructivistic and pragmatic perspective, even though the knowledge tests might encourage reproduction oriented learning activities.

However, some considerations need to be taken into account regarding the significant changes found in the first half year. Mean
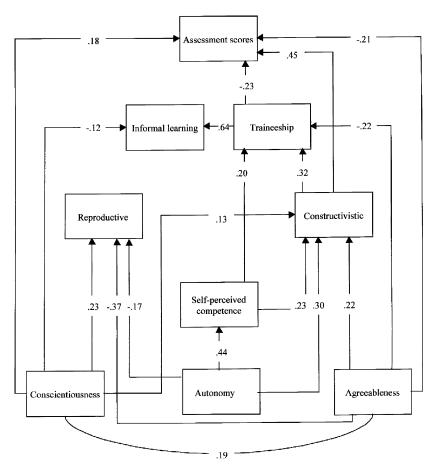

Figure 2. Maximum likelihood estimates (standardised regression weights) for the final SEM-model (error terms are omitted from the figure).

scores across the first and second measurement moment were compared with students' scores at the third measurement moment. This might have had an inflative effect on our findings. Students reported role-play learning and learning during traineeships most frequently and learning from information sources least frequently for the acquisition of social-communicative competencies. Learning from traineeships, learning from experts and informal learning increased during the first year. The increase in learning from traineeships was due to the first year curriculum. In the second semester, all students were trainees for half a day every week and, as a consequence, they reported more learning activities during traineeships. This also explains the increase in learning from experts. They had ample opportunities to meet experts and worked with them in the organisations in which they were trainees. Students reported more informal learning activites than before. It is possible that students have learned to see certain informal learning situation as 'potential learning experiences', which they did not see before (Eraut, et al. 1998). By the end of their first year, students have acquired more instructional meta-cognitive knowledge (Elen and Lowyck 1998) and, as a consequence, they might view the opportunities for learning in the learning environment differently.

Towards an integrated model

In general, our model could be confirmed. Three personality characteristics (conscientiousness, autonomy and agreeableness) were found to be in the basic layer of our model. As expected, autonomy influenced self-perceived communicative competence. Personality characteristics also directly influenced assessment scores, learning activities and learning conceptions. Vermetten et al. (1999) found positive paths from agreeableness and conscientiousness to a reproductive learning-approach. In our study, we also found a positive path from conscientiousness to the reproductive learning conception. In contrary to the study of Vermetten and colleagues, in our model two negative paths were found from agreeableness and autonomy to this learning conception. A possible explanation might be that Vermetten et al. conducted their study in an academic setting, while this study was conducted in a competence-oriented educational institute, in which skills and application in real life contexts is emphasised. Reproduction-oriented learning is not the best way to view learning, when students

want to become good social workers in the future. Next to that, the educational institute values a constructivistic instead of a reproduction-oriented way of learning. Agreeable students might adopt the institutes' "paradigm" and, as a consequence, show this pattern. We also found that all three personality characteristics had a positive relation with the constructive learning conception. Students strongly favour the constructive learning conception, but do not avoid reproductive learning in the acquisition and development of social-communicative competence. This is represented in the paths we found from personality characteristics to the learning conceptions.

Autonomy is about being creative, intelligent and imaginative and is often found to be related to learning ability (Peabody and Goldberg 1989). In our model, autonomy was not directly related to learning activities or assessment scores, whereas conscientiousness and agreeableness were. Paths ran from personality (conscientiousness and agreeableness, respectively) to informal learning and learning in traineeships (negative relationships). This could be due to the circumstances in which these learning activities take place; self-regulation is very important in informal learning situations and in learning during traineeships (Van der Sanden et al. 2000). It is not possible to fully plan one's actions in advance. Informal learning and learning during traineeships require students to deal with incidents and to react adequately to unplanned and often conflicting events, which might cause trouble for conscientious and agreeable students. It is also possible that traineeships influence the way students view effective communicative behaviour and develop action theories concerning communicative behaviour (Van der Sanden et al. 2000). In the first year, students start developing these action theories to which both experiences in school learning as practical learning contribute. Students may adopt a revised view on "right and wrong" behaviour when they attend traineeships, which is not covered in the knowledge tests in school. It is known that students rely on more "immature" learning conceptions (Entwistle and Walker, 2000) when entering new learning situations, like traineeships. This might be reflected in their assessment scores.

Eraut et al. (1998) claimed that the greater part of learning takes place at the workplace. In this case, it is extremely important to provide students with positive role models and effective coaches. The organisations, which are attended by social work trainees, however, cannot always be looked upon as 'positive role model organisations'. From a constructivistic view point it is most likely that students might intui-

tively develop guidelines for professional communicative behaviour from their observations in trainee organisations. They might experience conflicts between formal learning in school and learning experiences in informal and trainee environments (Van der Sanden et al. 2000). This might lead to misconceptions (Biemans 1997), which lead to worse assessment scores.

Conscientiousness affects students' assessment scores directly, probably because conscientious students are serious and responsible students motivated to achieve (Peabody and Goldberg 1989; Snow et al. 1996). Agreeableness also had a direct negative effect on assessment scores. Agreeableness refers to being friendly, flexible and co-operative. Although, such characteristics can be helpful, they might also cause trouble in professional situations in which problematic dialogues with non-co-operative, helpless or desperate clients require firm behaviour. In role-play tests agreeable students, who do not explicitly ask many (painful) questions to their clients (grilling), will probably fail the test. We found that students scored significantly lower on agreeableness at the end of the year than they did before. It is plausible, that students became more assertive during the first study year, compared to when they started their academic year. It is also possible that students acknowledged that being less agreeable "pays off" and that this insight caused them to change their behaviour.

We want to emphasise that our model is a starting point, which should be investigated further. Studies with larger student samples and different kinds of disciplines might shed more light on this model. However, our study is not limited to the field of social work; it may be relevant for all contexts of learning in which communication plays a major role, for example, in Teacher Training Colleges, Colleges of Management and Health Care and Nursing.

In future research, it might be interesting to compare personality characteristics, learning conceptions and learning activities for more mature students to those of first-year students. Possibly a more or less stable profile could be found for all students. Consequently, this profile could be used to predict study success. We found that students' characteristics change during their first academic year and that assessment scores later in the year could not be predicted convincingly using the findings at the beginning of the year. In a future study, we will search for factors, which can be assessed at the beginning of the academic year and have the potential to predict study success later in the year.

Practical implications

Students' characteristics are important in the way students acquire social-communicative competence. Student-related variables influence learning behaviour, but are susceptible to change during the first academic year. An awareness of factors that affect learners conceptions can assist instructional designers in creating more effective instructional tools and learning environments, tuned to the students' characteristics (Cennamo 1993).

It could be useful to inform teachers and mentors about student variables, personality structure and the relatedness of these factors. Teachers can use this information in their classes: when it is found that many students have reproductive learning conceptions, the teachers can explore these views and ask students why they think they should learn reproductively, and so on. Teachers can also show how one can learn from a constructivistic point of view and why that can be very fruitful. Probably all teachers would like their students to strive for understanding and professional development (Perkins and Unger 1999). A good insight into student-related variables is a condition for being able to optimally guide regulation of these (cognitive) processes. Additional value can be found in the process of tuning teacher conceptions to student conceptions (Entwistle and Walker 2000).

It might be possible to create "student profiles" for starting and more mature students. This might be interesting for students and teachers, because the younger students might be enabled to compare their "scores" with the scores of (successful) older students. The mean scores of the more mature students (see also Bakx et al. 2003), could serve as a starting frame of references, or benchmark. The mean scores of this "reference group" should be maintained and updated by the years, by adding new research findings. The questionnaires used in our study can be put on the Internet; students can complete the questionnaires within the first 3 weeks of their academic year. It is possible to provide direct feedback about the student's individual scores. This could be repeated after 6 months and be integrated throughout the entire curriculum. Students could use the diagnostic information in composing and refining personal development plans, in which they specify the ways they are going to work on the improvement of social communicative competencies (what kind of activities, when, how, with whom or what and so on). Additional content material and assignments for instance to change conceptions into a more desirable direction, can be included in the feedback module (Reigeluth and Schwartz 1989; Schuwirth 1998; Swaak

1998; Parlangeli et al. 1999). Special attention in the assignments should be given to informal learning situations, because these were found to play an important role in the views students develop on learning to communicate with clients, for instance. After six months, the student completes the questionnaires again and compares his scores from the first measurement moment with his scores from the second measurement moment. The questionnaires, the personal development plan and the reflections can all be included into a personal digital portfolio (Beijaard et al. 1997; Tillema 2000; Van Tartwijk et al. 2000; Lea and Evans 2001). Students can maintain this portfolio by themselves and teachers can monitor the process from their own workplace. Working with digital portfolios via Internet makes the questionnaires and the portfolios available at any time to fit curriculum needs and also resolves time and space constraints (Kieley 1996; Erwin and Rieppe 1999; Parlangeli et al. 1999; Hara et al. 2000). In this way new and flexible tools become available for actively working on the improvement of the quality of views on learning and to increase self- awareness, which is important in social work education (Ladyshewsky and Gotjamanos 1996).

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Appendix: Correlations among self-perceived competencies, learning conceptions, and reported learning activities, personality traits and assessment scores at the end of the first academic year (n = 123 first-year students)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Self-perceived competence																			
1 asser	—																		
2 grill	0.59**	—																	
3 emph	0.51**	0.48**	—																
4 open	0.46**	0.47**	0.48**	—															
5 struc	0.58**	0.74**	0.51**	0.47**	—														
Learning conceptions																			
6 const	0.23*	0.26**	0.41**	0.36***	0.28**	—													
7 text	0.13	−0.04	0.06	0.08	0.03	0.22*	—												
8 prag	0.20*	0.14	0.32**	0.27**	0.20*	0.50**	0.50**	—											
9 mode	−0.07	−0.26**	−0.12	−0.10	−0.12	−0.17	0.50**	0.33**	—										
Reported learning activities																			
10 sour	−0.03	0.07	−0.04	−0.02	0.16	0.02	0.26**	0.09	0.24**	—									
11 exp	0.13	0.17	0.24*	0.06	0.27**	0.22*	0.12	0.27**	0.15	0.52**	—								
12 info	0.12	0.14	0.10	−0.01	0.18	0.20*	0.20*	0.20*	0.21*	0.29**	0.46**	—							
13 role	0.34**	0.23*	0.28**	0.30**	0.35**	0.42**	−0.03	0.25**	−0.19*	0.18	0.38**	0.16	—						
14 trai	0.10	0.07	0.18	0.08	0.23*	0.40**	0.11	0.23*	0.10	0.41**	0.64**	0.54***	0.42**	—					

Appendix: Continued

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Personality traits																			
15 agre	−0.10	0.00	0.18	0.17	0.06	0.34**	−0.01	0.24*	−0.23*	−0.23*	−0.10	−0.01	0.11	0.02	–				
16 cons	−0.02	0.07	0.13	0.27**	0.10	0.21*	0.13	0.24*	−0.06	−0.04	0.12	0.00	0.08	0.17	0.31**	–			
17 extr	0.38**	0.20*	0.41**	0.43**	0.21*	0.29**	−0.01	0.15	−0.07	−0.06	0.25**	−0.00	0.30**	0.15	0.22*	0.07	–		
18 auto	0.56**	0.43**	0.45**	0.43**	0.34**	0.45**	−0.00	0.21*	−0.25**	−0.00	0.20*	0.08	0.41**	0.19	0.18	0.04	0.55**	–	
19 stab	0.21*	0.08	0.14	0.17	0.10	0.24*	0.14	0.31**	0.07	0.03	0.13	0.06	0.17	0.16	0.25**	0.07	0.45**	0.45**	–
Assessment scores																			
20 asse	0.02	0.19*	0.06	0.02	0.08	0.27**	0.01	0.05	−0.18	0.05	−0.03	0.12	0.16	0.15	−0.09	0.22*	−0.19*	0.04	−0.05

**Correlation is significant at the 0.01 level 2-tailed.
*Correlation is significant at the 0.05 level 2-tailed.

asser: being assertive during a conversation; gril: grilling; emph: showing emphathy; open: opening a conversation; struc: structuring a conversation; const: constructivistic learning conception; text: text-based reproductive learning conception; prag: pragmatic learning conception; mode: model-based reproductive learning conception; sour: learning from information sources; form: formal learning; info: informal learning; role: role-play learning; trai: learning during traineeship.