

Are individual students' characteristics and academic performance associated with group-level functioning in educational groups?

AN EXPLORATORY STUDY

Av Tore Bonsaksen og Mary V. Donohue

Tore Bonsaksen is Professor at Oslo and Akershus University College of Applied Sciences, Department of Occupational Therapy, Prosthetics and Orthotics, Faculty of Health Sciences in Oslo in Norway and VID Specialized University, Faculty of Health Studies in Sandnes in Norway.

Email: tore.bonsaksen@hioa.no

Mary V. Donohue is Clinical Professor (retired) at New York University in New Jersey, USA

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ARE INDIVIDUAL STUDENTS' CHARACTERISTICS AND ACADEMIC PERFORMANCE ASSOCIATED WITH GROUP-LEVEL FUNCTIONING IN EDUCATIONAL GROUPS? AN EXPLORATORY STUDY

Abstract

Background: The recently developed Social Profile assessment allows for classifying a group's interaction behaviors within five levels. However, empirical associations between the levels, and factors related to an overall Social Profile measure, have not been examined.

Methods: A sample of 35 occupational therapy students was recruited. Data was collected by self-report questionnaires, including the Social Profile and basic sociodemographic information. Descriptive statistics, bivariate correlation, and linear regression analyses were performed.

Results: The basic cooperative level was most frequently found in the study groups. In general, levels of social interaction were more strongly associated with nearby levels, and more weakly or negatively associated with levels representing more different behaviors. The overall Social Profile measure related to the levels of interaction in a mostly logical way. Spending more time with the group was associated with a higher Social Profile measure, but this measure was unrelated to individual exam grades.

Conclusion: Student study groups appear to operate at all levels of social interaction, but most frequently at the basic cooperative level. Associations between the five levels and the overall Social Profile measure was mostly logical, indicating the theoretical accuracy of the model concepts.

Keywords: Social Profile, linear regression analysis, assessment, groupwork, social participation.

INTRODUCTION

Cooperation in groups has operated forever next to competition (Nowak, 2012). In college study groups a perfect example is seen with student competitors cooperating to check on class notes, ask for clarification, teach others about complicated concepts, share ideas about exams, and provide a support system (Rybczyski & Schussler, 2011; Willment, 1999). Reporting from a meta-analysis of earlier studies comparing cooperation with competition, Johnson and Johnson (2000) reported that people operating in a cooperative manner performed at higher levels than those operating in a competitive or individualistic manner. They did warn readers of research that they need to be alert to methodology in a number of studies focused on cooperation versus competition. On the other hand, they did find that cooperative study groups do appear to spend more «time on task» than students in competitive groups or those working individually (Johnson & Johnson, 2000). Whether or not more 'time on task' would translate into better academic outcomes, however, depends on a range of other factors, amongst them possibly the age and intellectual maturity of individual group members. The mission of professional education itself involves assisting students to think and to reason in order to solve problems in practice, not just assisting their acquisition of facts (Molander & Terum, 2008). Intellectual maturity would therefore logically be a result of having more educational experience. In support of this reasoning, a recent study found that having prior experience from higher education significantly predicted better academic outcomes among undergraduate occupational therapy students in Norway (Bonsaksen, 2016).

Cooperation is the major construct of the Social Profile, a relatively new assessment of social group participation used with individuals or groups (Donohue, 2013). Cooperation is at the heart of the scale as people in a group may move from parallel, to associating briefly, to basic cooperation in the rules of games, to supportive cooperative empathy, to mature cooperation combining the basic and supportive levels. Cooperation within groups, as viewed by social developmental theory, is the joint effort of individuals to achieve the goal of activities through interaction at a level appropriate to the group's abilities and the nature of the task (Bandura, 1977; Cole & Donohue, 2011). People may also choose to use a number of these levels of group interaction depending on what the activity evokes or requires

(Donohue, 2013). During our lifetime, from two years old onward, we move through these phases of social growth, and use them again when the occasion demands. Social participation consists of interpersonal interaction with others in a verbal and/or activity mode (Cole & Donohue, 2011). Building on Mosey's original conceptualization of activity groups (Mosey, 1986), the items of the Social Profile are proposed to reflect social participation at the five different levels: namely parallel, associative, basic cooperative, supportive cooperative, and mature levels. These are levels with increasing complexity and with an increasing demand for social skills, but are not viewed as exclusive: rather, a person or a group may interact at different levels of participation depending on the setting or the purpose of the group (Donohue, 2013).

Activity at the parallel level precedes group interaction and may inspire a cooperative use of space through modeling by others present carrying out an individual activity. Associative activity develops as pre-school children briefly speak or interact around a common activity. Basic cooperative interaction begins as children say to each other, «Let's play ball» or «Let's dress up together.» Supportive cooperative participation emerges as teenagers notice emotional responses during interactions together, and respond emotionally to each other. Mature cooperation combines the structure of basic cooperation with the interpersonal interaction of supportive cooperation in a balanced manner (Brown & Stoffel, 2011; Cole, 2012; Cole & Donohue, 2011; Mosey, 1986; Parten, 1932; Sladyk, Jacobs, & MacRae, 2010).

Recently, a mixed-methods study of four occupational therapy students examined how the students rated the development of their study group with the Social Profile across four time points, and aligned their scores with the way they described their group's development during subsequent interviews (Bonsaksen, Eirum, & Donohue, 2015). The study showed various degrees of connectedness between interview statements and Social Profile scores at the item level, whereas descriptions of the groups' stability or change across time corresponded very well with the trajectories as indicated by their Social Profile scores. A previous review identified the Social Profile to be one of the available instruments for assessing groups in naturalistic settings, like educational settings (Lim & Rodger, 2008).

Working together as a study group in higher education would generally require behaviors that reflect

relatively high levels of social functioning, as study groups frequently engage in discussion and other forms of verbal interaction. Study group behaviors should assist in keeping the group members on task, and research has suggested that study groups may facilitate individual academic performance (Forsyth, 2006). At the same time, study groups should care for its members' emotional and relationship needs, and seek to find the appropriate balance between orienting towards the tasks and the relationships in the group. Using the concepts of the Social Profile (Donohue, 2013), such behaviors would reflect a group functioning primarily at the basic cooperative, supportive cooperative, and mature levels, respectively. In accordance with this view of study groups in higher education, we would also assume stronger associations between levels of interaction that are close to one another (e.g., between the basic cooperative level and the supportive cooperative level), compared to associations between levels that reflect very different types of social behaviors (e.g., between the parallel level and the mature level). Previously, no similar empirical assessment of the intrinsic relationships between the five levels of social participation have been reported in the literature.

Evidence of the reliability, validity, and feasibility of the Social Profile instrument is provided in the Methods section. So far, however, there appear to be no studies reporting about factors associated with an overall Social Profile score. In fact, previous research with the Social Profile has been mostly concerned with examining functioning within each of the five levels of participation, and not with establishing an overall measure of social participation. Such an overall Social Profile measure, indicating the general level of social participation in a group, was not developed until recently (Bonsaksen, Donohue, & Milligan, 2016; Milligan & Bonsaksen, 2016), and this is the first study to explore factors associated to it.

The higher education context appears to be a good place to start such exploration. Studying in groups is integral to most professional education programs, and interacting in groups is generally an emphasized and valued mode of study (Lycke, 2006). Group interaction among students is also viewed as an important preparation for subsequent professional practice (Brask & Østby, 2013). However, students' level of social participation and commitment to the work in groups may vary (Bjaland & Mosvold, 2014), and the quality of the study group interaction may be associated with indi-

vidual student characteristics. For example, students of higher age may be more strongly motivated and committed towards their studies, compared to younger students (Kasworm, 1990), and this may well translate into more time on task in group work and better academic results (Webb, 1982). Employment among higher education students is common, but the results concerning the impact of employment on outcomes have been contradictory (Riggert, Boyle, Petrosko, Ash, & Rude-Perkins, 2006) – some studies suggest a negative impact on academic performance, whereas others suggest a neutral or even positive influence. In this study, thus, we decided to assess the strength of the relationships between group functioning (as measured with the overall Social Profile score), age, time invested in the group process, and time invested in paid work.

AIMS OF THE STUDY

The first aim of this study was to measure the associations between the five levels of social participation as measured with the Social Profile. The second aim was to assess factors associated with group-level functioning in occupational therapy students' educational groups. Specifically, our research questions were: 1) What are the relationships among the mean scores of the five levels of social participation? 2) What is their relationship with the total Social Profile score? 3) Are age, time spent in study group work, and time spent at employed work associated with the total Social Profile score? and 4) Are age, time spent in study group work, and the total Social Profile score associated with the exam grade of the relevant study course?

Methods

STUDY CONTEXT

With the aim of examining group-level processes in occupational therapy students within a short time frame, we pragmatically recruited participants among occupational therapy students from one university only. The study was conducted at the occupational therapy education program at Oslo and Akershus University College in Oslo, Norway. Approximately 250 students are enrolled in the program, with about 70 students graduating each year (Bonsaksen, Kvarsnes, & Dahl, 2016). The undergraduate education program has a duration of three years (Oslo and Akershus University College of Applied Sciences, 2011). Fifty-eight students entered the second year of the education program in

August 2015, and 53 of these students participated in the Social Profile seminar during which the study participants were recruited. There were no exclusion criteria.

A study module on mental health and participation, with a duration of ten weeks, starts the second year of the program. During this module, the students are introduced to the Social Profile in a half-day seminar. The seminar instructors have in part been taught by the author of the original assessment, and have partly gained expertise in using the assessment in clinical practice and in research (Bonsaksen, Eirum, et al., 2015). The first author also performed a preliminary translation of the instrument into Norwegian (Bonsaksen, Kvarsnes, & Eirum, 2015). The students had no previous knowledge of the Social Profile.

MEASURES

Data concerning age, sex, and study group was provided. In addition, the students were asked to report the number of hours their study group had spent together during the last week, and about the number of hours they (as individuals) usually spend in paid work during a normal week. They were also asked to indicate, on a five-point scale, the degree to which they were satisfied with working in groups in general (response coding: 1 = very unsatisfied, 2 = unsatisfied, 3 = somewhat satisfied, 4 = satisfied, 5 = very satisfied), and the degree to which they felt, in general, that group work contributed to their learning outcomes (response coding: 1 = very little, 2 = a little, 3 = somewhat, 4 = much, 5 = very much). At the conclusion of the study module, the participants' exam grades relating to the mental health and participation module were collected from registration data at the university.

The Social Profile

The main instrument used in this study, the Social Profile (Donohue, 2013), is a 39-item assessment of social participation in activity-based groups. The items are formulated as statements that may be treated as reflecting behaviors of individuals in groups (individual assessment), or as reflecting the behaviors of the group as a whole (group assessment). Participants respond to each statement by indicating the frequency of the described behavior on a 6-point Likert type scale. The Social Profile is both an ordinal level and an interval level scale: ordinal across the five developmental levels, and interval

on the item level (Donohue, 2013). In clinical work, some therapists may choose to use the ordinal scale only to determine the level of social participation of a client or a client group. In research, it is suggested that both scales are employed.

Previous studies using the Social Profile have provided evidence of its psychometric properties. The internal consistency of the items has been examined, and moderate consistency (Cronbach's $\alpha = 0.71$) was found in a sample of 21 groups with a total of 242 children (Donohue, 2003). The analysis suggested that no items should be removed from the scale. A study of interrater reliability (Donohue, 2005), in which two observers rated 15 groups consisting of a total of 187 children, yielded an intraclass correlation coefficient (ICC) of 0.88 ($p < 0.001$). Over the years in development, the Social Profile has been reduced from 252 to 39 items (Donohue, 2013), and it is now considered to be of acceptable length, indicating that it may be feasible to use in clinical practice settings (Donohue, 2001).

Content validity examination was carried out with a review of items by a panel of eleven judges with psychosocial occupational therapy group expertise (Donohue, 2003), and the Social Profile items were found to reflect the original concepts as introduced by Mosey (1986) and Parten (1932). For the assessment of criterion validity, Parten's study and ordinal classification of interaction levels (1932) was used for comparison and contrast with the ordinal levels of the Social Profile. The resulting correlation coefficient ($r_s = 0.85$, $p = 0.01$) indicated a strong association between the two ways of assessing interactional functioning in activity groups (Donohue, 2003).

Construct validity was assessed by several methods. Clusters of age groups of children were used as a construct by which developmental skills in activity group participation were assessed during free play (Donohue, 2003). The study indicated that the group behaviors, as rated with the SP, were in accordance with the relevant age group expectancies – higher level behaviors were more frequent in the older age groups, and vice versa (all $p \leq 0.001$). An exploratory factor analysis concluded that a three-factor solution had the best fit with the data (Donohue, 2003), whereas one later factor-analytic study confirmed the presence of four latent factors (Donohue, 2005). Both studies used data from assessments of children's group (children aged 2–5 years), which can in part explain the discrepancy in

VARIABLES	VALUES
<i>Sociodemographic</i>	<i>n (%)</i>
Female sex	29 (82.9)
Norwegian origin	32 (91.4)
	<i>M (SD)</i>
Years of age	24.7 (4.7)
Weekly hours spent in paid work	7.3 (6.1)
<i>Perceptions about group work (1-5)</i>	
Satisfaction with group work	3.6 (0.7)
Groupwork contributes to learning outcomes	3.5 (0.6)
<i>Social Profile mean levels (0-5)</i>	
Parallel level	1.97 (0.71)
Associative level	2.93 (0.63)
Basic cooperative level	3.67 (0.77)
Supportive cooperative level	3.12 (0.80)
Mature level	3.07 (1.11)
<i>Social Profile total scale score (1-5)</i>	3.18 (0.17)
<i>Study performance (1-6)</i>	
Exam grade	3.74 (1.20)
<p><i>Note.</i> On perceptions about group work, higher scores are more satisfied/contributes more to learning outcomes. On the Social Profile mean levels, higher scores indicate that the group shows behaviors related to this level more frequently. On the Social Profile total scale, higher scores are higher level functioning. Exam grades are coded as: 1 = insufficient, 2 = sufficient, 3 = satisfactory, 4 = good, 5 = very good, 6 = excellent.</p>	

Table 1: Characteristics of the participating occupational therapy students ($n = 35$).

relationship to the five levels of social participation as described in the present version of the instrument (Donohue, 2013).

A study of the sensitivity of the Social Profile was carried out in a psychiatric unit. It was found that the instrument was able to detect statistically significant and clinically meaningful changes in the participants' social participation across a 30-day intervention period (Donohue, Hanif, & Wu Berns, 2011). The difference between the pre-test and post-test scores was moderate in effect size (Cohen's $d_z = 0.5$), and a test power 0.84 was found.

A preliminary Norwegian translation of the Social Profile was used in the study (Bonsaksen, Kvarsnes, et al., 2015). This translation was the result of two independent forward translations that were harmonized into one final translation by the three authors'

carefully comparing the similarities and differences between the two initial versions. Average scores for each level of participation were obtained within each of the Social Profile domains by summing the relevant item scores and dividing it with the number of items. We then simplified the analysis by combining the three scores relating to the same level of participation into one. Thus, the averaged scores within each of the three domains were collapsed into one averaged score for each level of social participation. Finally, we calculated an overall Social Profile score according to the recently developed formula (Bonsaksen, Donohue, et al., 2016; Milligan & Bonsaksen, 2016):

Social Profile score

$$= \frac{\text{mean P} + (\text{mean A}) \times 2 + (\text{mean BC}) \times 3 + (\text{mean SC}) \times 4 + (\text{mean M}) \times 5}{\text{mean P} + \text{mean A} + \text{mean BC} + \text{mean SC} + \text{mean M}}$$

In the formula, P indicates the parallel level, A the associative level, BC the basic cooperative level, SC the supportive cooperative level, and M the mature level. An overall Social Profile score close to 1 therefore indicates a level of social participation that is, in general, closest to the parallel level. Similarly, scores close to 2, 3, 4, and 5 indicate levels of social participation that are, in general, closest to the associative, basic cooperative, supportive cooperative, and mature levels, respectively.

The participants in this study completed the Social Profile after having read the following instructions: «Please consider how the interaction in your study group has been during the last week. Based on your observations of the interaction in your group, circle the number that best describes how frequently this behavior occurs».

DATA ANALYSIS

The data were analyzed with the computer program IBM SPSS for Windows, version 23 (IBM Corporation, 2015). In describing the sample on the selected variables, descriptive analyses were performed. Mean scores (M) and standard deviations (SD) are reported. The Social Profile total score was found to have a normal distribution (Kolmogorov-Smirnov = 0.09, $ns.$), and parametric statistical tests were therefore employed in the subsequent inferential analyses.

Bivariate associations were examined with Pearson's correlation coefficient r . Two hierarchical linear regression analyses (Field, 2005; Tabachnick & Fidell, 2013) were performed. First, we examined

Participation levels	2	3	4	5	6
1. Parallel	0.18	-0.23	-0.22	-0.32	-0.63**
2. Associative	1	0.48**	0.47**	0.29	-0.15
3. Basic cooperative		1	0.54**	0.83**	0.65**
4. Supportive cooperative			1	0.62**	0.34
5. Mature				1	0.70**
6. Social Profile (total score)					1

Note. Table content is Pearson correlation coefficients *r*, indicating the strength of the bivariate associations between the mean scores on each of the five levels of social participation, and the Social Profile total scale score.
 ** *p* < 0.01
 * *p* < 0.05

Table 2: Correlation matrix of the Social Profile mean scores (*n* = 35)

factors independently related to social functioning levels in the groups, as perceived by individual students. The Social Profile total scale score was used as the dependent variable. Second, we examined factors independently related to the students' subsequent exam grades in this particular study module. Both regression analyses also assessed the amount of variance in the dependent variables that was explained by the independent variables in the model. Independent variables were included after considering their relevancy for understanding group social functioning and academic performance. As a result, in the first regression analysis examining factors related to the overall Social Profile level, independent variables were included in two blocks: 1) age, and 2) time spent on group work during the preceding week, and time spent in paid work during a normal week. In the second regression analysis examining factors related to exam grade, the two included blocks were 1) age, and 2) time spent on group work during the preceding week, and the Social Profile total scale score. The level of statistical significance was set at *p* < 0.05.

ETHICS

All of the students were informed about the study by the principal researcher (first author) and gave their written consent to participate. As the first author also had the role of seminar instructor, it was emphasized that study participation was voluntary and there would be no negative consequences for persons who opted not to participate. Conversely, those who took part in the study received no benefit from it. Approval from the Norwegian Data Protecti-

on Official for Research was granted (Project number: 39201).

Results

SAMPLE CHARACTERISTICS

Thirty-five students (response rate 66.0 percent) chose to participate in the study. Of these, six were men (17.1 percent) and 29 were women (82.9 percent). The sample mean age was 24.7 years (SD = 4.7 years). On average, the participants were satisfied with working in groups, and felt that group work did contribute to their learning outcomes. The Social Profile mean scores for each level of social functioning showed that the groups were perceived as operating at all five levels, but most frequently on the basic cooperative level. The Social Profile total scale scores indicated the the groups, in the most general sense, operated between the basic cooperative (*M* = 3.67) and the supportive cooperative levels (*M* = 3.12). Table 1 provides details about the characteristics of the sample.

BIVARIATE ASSOCIATIONS BETWEEN LEVELS OF SOCIAL FUNCTIONING

Table 2 shows the bivariate associations between the mean scores on each of the five levels of social functioning and the Social Profile total scale score. The Social Profile total scale score showed strongly positive and statistically significant associations with both the basic cooperative level scores (*r* = 0.65, *p* < 0.01) and with the mature level scores (*r* = 0.70, *p* < 0.01). The parallel level score was inversely associated with the Social Profile Scale score (*r* = -0.63, *p* < 0.01). The strongest association was found between

Independent variables	Std. β	p
Block 1		
Age	-0.23	0.19
Explained variance	5.4 %	0.24
Block 2		
Time spent on group work	0.53	< 0.01
Time spent in paid work	-0.03	0.85
R2 change	28.5 %	0.01
Explained variance	33.8 %	0.02

Note. Table content is standardized beta weights with corresponding p-values, indicating the strength and probability of the associations with the Social Profile total scale score when controlling for all variables in the statistical model.

Table 3: Hierarchical linear regression analysis with Social Profile total scale score as outcome ($n = 35$).

the basic cooperative and the mature levels ($r = 0.83$, $p < 0.01$).

FACTORS INFLUENCING THE SOCIAL FUNCTIONING IN GROUPS

Table 3 shows the results from the linear regression analysis, examining independent variables associated with social functioning in groups (Social Profile total scale score). Controlling for all variables in the statistical model, more time spent on group work showed a strong and statistically significant association with a higher perceived level of group functioning ($\beta = 0.53$, $p < 0.01$). The full model, including age as the independent variable in the first block, accounted for 33.8 percent of the variance in group functioning ($p = 0.02$), while age only accounted for 5.4 percent of the variance.

FACTORS INFLUENCING THE STUDENTS' EXAM GRADE

Table 4 shows the results from the linear regression analysis examining independent predictors of individual exam grades related to the study module. Controlling for all variables in the statistical model, none of the included variables displayed statistically significant associations with individual exam grades among the participants. The effect size related to the impact of higher age associated with a better exam grade ($\beta = 0.38$, $p = 0.06$), however, was noteworthy. All variables in the statistical model (both blocks) accounted for only 15.6 percent of the

variance in exam grades, and including time spent on group work and the Social Profile total scale score in the second block of the model only marginally improved this measure of explained variance.

Discussion

In summary, the participants in the study were young, predominantly female, and had a positive attitude towards group work and what they could achieve from it in terms of learning outcomes. The basic cooperative level received the highest mean score of the five participation levels, and the participants' exam grades following the study module bordered towards «good». There was a general trend that participation levels close to one another were more strongly correlated, compared to participation levels that reflected more different types of behaviors. The total Social Profile score showed a relatively consistent pattern of having strong positive associations with higher levels of participation, and weaker/negative associations with lower levels of participation. Its relationship with the supportive cooperative level, however, departed from this pattern. Participants in groups where more time was spent doing groupwork rated the group's participation level higher, but the groups' overall perceived social participation level was not associated with the students' exam grade.

The results of this study are consistent with the theory behind the Social Profile, a social developmental theory, in which the parallel level of «interaction» consists of no true participation (Donohue, 2013). This was reflected in the negative associations between the parallel level scores and the scores on most of the other levels of social participation (see Table 2). It is also expected and hoped that occupational therapy students in a college level study group would not be exhibiting behaviors at the parallel level, consisting of a lack of participation. The exception might be in specific cases where the group members have agreed to complete some tasks individually, before again starting to interact as a group on the basis of the group members' individual work. Generally, we found the expected pattern of strong and positive correlations between levels close to one another, and weak or even negative correlations between levels representing more different types of behavior.

Given that the study groups were perceived as functioning mostly at the higher levels of social participation, the strong and positive associations

between the higher levels and the Social Profile total scale score is logical. The departure from this pattern of correlations concerns the supportive cooperative level – there was no significant correlation between the supportive cooperative level of the Social Profile and the overall total score on the Social Profile (see Table 2). This may be because the supportive cooperative level of participation includes items which are expressive of emotion and exhibit interaction demonstrating camaraderie, a possibly casual manner of relating to each other (Donohue, 2013). The supportive cooperative behaviors might not be the best manner to participate in a college level study group. In fact, getting into personal material and digressing into emotions might derail the purpose of the study group (Forsyth, 2006). So emphasizing basic cooperative and mature behaviors indicate that the occupational therapy students in these groups were able to focus on the material in their course work in an appropriate manner. In fact, some authors on the subject of study groups have indicated that one of the reasons some students do not like study groups or leave the groups is due to the group getting «off track» as far as the material of the course goes (Rybczyski & Schussler, 2011; Weimer, 2012). The results of this study would appear to indicate that the students were able to pursue their studies in a focused, business-like, achievement-oriented, non-emotional manner, in their study group work.

Examining the regression analysis of factors associated with the Social Profile's total scale score, more time spent on group work showed a statistically significant association with a higher Social Profile total scale score (see Table 3). It is encouraging to see that the Social Profile, still a relatively new assessment with little previous testing of the total scale score, could capture that result. It appears that the time invested with the group strongly impacts how the group is perceived. In contrast, time spent in paid work was unrelated to the Social Profile total scale score. Initially, we wondered whether paid work could have taken student workers' attention away from the study group, in line with some of the previous research in the field (Riggert et al, 2006). If it did, they might have come to perceive their group as functioning at a lower level of social participation. However, this did not seem to be the case. This echoes, but also extends, the recent finding from a substantially larger study that time spent in paid

Independent variables	Std. β	p
Block 1		
Age	0.38	0.06
Explained variance	12.8 %	0.06
Block 2		
Time spent on group work	-0.20	0.39
Social Profile (total scale score)	0.12	0.61
R2 change	2.8 %	0.68
Explained variance	15.6 %	0.25
Note. Table content is standardized beta weights with corresponding p-values, indicating the strength and probability of the associations with exam grade when controlling for all variables in the statistical model. Higher Social Profile score indicates higher level of group social functioning. Higher values on exam grades indicate better grades.		

Table 4: Hierarchical linear regression analysis with exam grade as outcome (n = 35)

work did not impact on the students' academic performance (Bonsaksen, 2016). Education-related characteristics, such as study motivation, study approach, and intellectual maturity, may be factors that can better explain exam grades of individual students as well as how they perceive their study group.

No variables in the regression analysis had a statistically significant association with exam grade (see Table 4). Nonetheless, a noteworthy association to emerge was that with higher age ($\beta = 0.38$, $p = 0.06$), and given the strength of the association, the lack of statistical significance may be a result of low statistical power. However, previous research has found that an apparent effect of age on academic achievements may rather be an effect of having experience with the academic system and with academic studies more specifically (Bonsaksen, 2016; Shanahan, 2004). Students' participation in study groups, whether they be functioning at higher or lower levels, may be less important for students' individual exam grades. Related to this, three studies of college study groups found that there was no significant difference between the exam scores of those students who were members of study groups and those students who were not (Rybczyski & Schussler, 2011; Weimer, 2012; Willment, 1999). Extending the above argument, we may assume that participation in a poorly functioning study group can be of even less value for the students' learning than not

participating at all – rather, it can be a waste of time. However, this may well be different in other types of groups, for example in cases where more of the teaching is based on group participation, or when the exam itself is based on actual group performance.

Weimer (2012) argued that the benefits of study groups may be elusive: while on-going members of study groups may not consistently perform better on exams, when asked for qualitative input, 85 percent reported that they believed being in a study group helped them do better than they would have without the study group. The participants indicated that questions were answered, that material was clarified, and that listening to others talk about the content helped them understand it. Willment (1999) reported that students believed that the experience was productive. Rybcznski and Schussler (2011) indicated that most students in their study had a positive attitude about their interaction and believed that the study group boosted their grade in the course. We do not know how the participants in our study would have responded if they had been faced with such questions directly. However, as indicated from the completed Social Profile assessments, there was no relationship between the Social Profile scores and the students' subsequent individual exam performances. Thus, it may be that in this case, the instrumental value of the group was not only elusive, but in fact illusive.

STUDY LIMITATIONS

The Social Profile was carefully translated into Norwegian using a procedure with two independent translators and harmonizing the two versions into one. However, no formal back-translation procedure or pilot testing of the instrument items has so far been performed. Once this has been done, and a sufficiently large dataset has been provided, a factor analysis of the instrument is needed in order to verify its latent dimensions in the new culture and language context. Given the small sample size, the results of the study should generally be treated with consideration of this limitation. The sample was also one of convenience, and the participating students were introduced to the Social Profile by the teacher responsible for the ongoing study module, who also collected the data. There is a possibility that these circumstances have led to social reporting, i.e., that the participants have described the nature of the group interactions and the time spent doing groupwork in an overly positive way. A

limitation of the tool used, the Social Profile, is the effect of few items on some parts of the scale. The method of obtaining an overall Social Profile score by averaging the clusters of items may be a limitation; however, it can also be adding to its practical usefulness. In this study the plan to generalize scores based on observations during the preceding week may have affected the outcome of this data if that particular week was not the best performing week for a particular group. A broader picture might be obtained by asking the group to select their most typical week.

CONCLUSION

The five levels of social participation, as measured with the Social Profile, were intrinsically related to each other in a mostly logical way. The exception from this concerned the scores on the supportive cooperative level, and it may be that the instrumental, task-oriented educational setting can account for this departure from the overall pattern. More time spent on group work was related strongly and statistically significant with a higher perceived level of group functioning. Group functioning was unrelated to subsequent individual exam grades.

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