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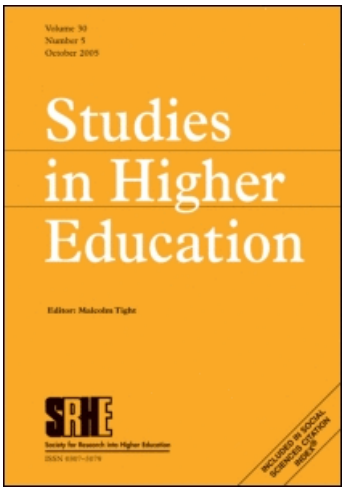

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Sabine Severiens [a]; Rick Wolff [a]
[a] Erasmus University, Rotterdam, The Netherlands

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A comparison of ethnic minority and majority students: social and academic integration, and quality of learning

Sabine Severiens* and Rick Wolff

Erasmus University, Rotterdam, The Netherlands

This article examines students from ethnic minorities and majorities with regard to the relationships between their social and academic integration and their quality of learning. A total of 523 students at four universities completed a questionnaire: analyses of variance were used to examine mean differences, and structural equation modelling (lisrel) was used to analyse differences in relationships between integration and learning. After one year of study, minority students had performed less well and had obtained a lower number of credits, even though their approaches to learning had been no different. Neither had there been any differences in integration. Furthermore, analyses revealed a different set of relationships between integration and learning for minority and majority students. For majority students, the impact of formal academic integration was positively related to grades, credits and approaches to learning. However, in the group of minority students, the role of formal academic integration was inconclusive: negatively related to grades, but positively related to the deep approaches to learning. In the conclusions, these results are interpreted and some suggestions for future research are presented.

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Introduction

Both in the Netherlands and internationally, earlier research has shown that, on average, students from ethnic minority backgrounds have lower completion rates in higher education (see Crul and Wolff 2002; Jennissen 2006; Van den Berg 2002; Van den Berg and Hofman 2005). The present study explores a possible reason for this poorer performance.

As our point of departure, we take Tinto's model on student attrition (1975, 1982, 1994, 1997, 1998), which holds that students' quality of learning, and their success or failure in persisting in their educational careers, depends, among other things, on their integration in the educational community. The quality of students' learning processes – which in turn determines their persistence – is determined by the way in which students interact with staff and teachers, and also by their social interactions with peers (in Tinto's model respectively academic integration and social integration). The main concern in this article is to examine how, in a North American and western European setting, integration of ethnic minority students in predominantly white institutions of higher education may be related to quality of learning.

Social and academic integration

According to Tinto's model, students who wish to persist in college and to graduate successfully need to participate in the student culture, both within and outside the immediate context of the learning environment. Those who feel at home, who take part in extra-curricular activities, and

*Corresponding author. Email: severiens@risbo.eur.nl

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who feel connected with fellow students and teachers, are more inclined to persist in their studies. Without social integration, it is more difficult to persist, and ultimately to graduate.

Integration naturally has an academic aspect as well as a social one, as one's willingness and ability to belong to a group depend partly on one's ability to meet the educational level. While this plainly requires certain cognitive abilities, time and effort are also required. Similarly, teachers and staff have to provide an educational context that invites students to integrate academically.

The concepts of social and academic integration also entail an extra distinction, one between formal and informal integration, each of which is important for successful integration.

The following distinctions thus apply to *academic* integration. While formal academic integration involves the contacts related to the institute itself, informal academic integration involves contacts between teachers and students outside the direct context of the learning environment: i.e. whether students and teachers consider themselves to be at more or less the same level socially, and whether they discuss private matters.

Similarly, at the level of *social* integration, formal integration mainly involves contacts between peers on matters of learning. Such contacts often revolve around collaborative work – for example, the ways in which students experience working together on tasks, especially in departments where project work is a substantial part of the curriculum, and the quality of cooperative work is thus an important determinant of student attrition. This formal level is distinct from the informal level, which is characterised by factors such as frequent social contact and participation in student activities. Students who have many friends at university, feel at home and enjoy going to university have a greater chance of obtaining their degree.

Literature searches in relevant databases over the past two decades have produced a number of studies on the associations between ethnic background and integration. In their investigation of social and academic integration in groups of ethnic minority and majority students, Nora and Cabrera (1996) describe a number of studies showing that minorities more often experience prejudice and negative contacts with peers, faculty and staff. Presuming that these experiences may cause minority students to drop out more often, Nora and Cabrera tested a structural model on a large sample of students. Their results supported the link between perception of prejudice and drop-out, through factors such as social and academic integration, academic and intellectual development and goal commitment. These links were observed for minorities and majority students alike. The results also showed that, while minority students experienced prejudice and discrimination more often, they more often evaluated their experiences with staff and peers as positive than did majority students.

Read, Archer, and Leathwood (2003) asked to what extent ethnic minorities feel they fit into academia. One finding of this study was that minority students sought out each other's company so as to increase their sense of belonging. Another study on the issue of integration in relation to ethnicity was conducted by Eimers and Pike (1997), who found that lack of academic integration more often bore negative consequences for ethnic minorities than for majority students. The same held true for lack of support from family and friends.

The relevance of the two types of integration was also illustrated by Christie, Munro, and Fisher's study (2004) on differences between continuing and non-continuing students. Poor choices, lack of social support and a lack of 'fit between student and institution' (617) were shown to be important factors underlying drop-out from college. Similar findings are reported by Fries-Britt (1998): 'research that has focused on Black students on predominantly White campuses overwhelmingly reveals a story of academic difficulty' (557).

Beekhoven (2002) examined possible differences in integration between minority and majority students in the context of Dutch higher education, and showed that students who perceive themselves as minority students are less well integrated, and achieve less study progress than

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those who defined themselves as Dutch (regardless of their parents' country of birth). Beekhoven also found that the concept of integration had little impact on study progress in both groups of students, i.e. minority and majority alike.

In short, no summary of the research conducted in this field can draw unequivocal conclusions on the extent to which minority and majority students differ in their social and academic integration. Some studies observe differences, sometimes to the advantage of minority students and sometimes to the advantage of majority students. Other research finds no differences. Similarly, while some studies find a link between integration and study progress, others do not.

One reason for these contradictory findings may be that Tinto's work does not provide clear operational definitions of integration. His view on one clear definition in each and every possible context is that the concepts of social and academic integration may acquire different meanings in different academic and cultural contexts. In the USA, where many students live on campus, social integration may mean something very different from social integration in the Netherlands, where many students live at home or elsewhere off campus.

One result of this is that much of the research using Tinto's framework has applied different operational definitions to social and academic integration. In the present study, therefore, we took two research steps when formulating operational definitions that would be valid in the context of Dutch higher education. The first consisted of a qualitative exploration of academic and social experiences among Dutch higher education students (Severiens, Wolff, and Rezai 2006). In a second step, the results were then used to construct measures for social and academic integration.

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The quality of learning

To allow for a detailed examination of the possible links between the extent of integration between different ethnic groups of students and their learning processes, we defined 'quality of learning' in three ways.

First, we examined the number of credits students obtained after a certain period of study, the idea being that successful students obtain their credits in a relatively small period of time. Second, we used students' average grades to indicate the quality of learning: the higher the average grade, the more successful the students were.

Our third method involved students' approaches to learning, and was based on Marton and Säljö's theoretical framework on deep and surface approaches to learning (see Marton, Hounsell and Entwistle 1997; Vermunt 1996). This holds that, in general, students with a surface approach focus on task requirements and on obtaining sufficient grades (extrinsic motivation), often using memorisation as a learning strategy. In contrast, the deep approach to learning can be characterised by an intention to understand (intrinsic motivation), and by learning strategies such as relating ideas to previous knowledge and everyday experience. In qualitative terms, the deep approach to learning is considered to be a better way of learning. Students who adopt this approach reach a deeper understanding of the learning material, and construct their own body of knowledge (Pintrich 2000; Vermunt 1993; Wolters 1998).

Thus, in summary, high-quality learning can be characterised by: 1) a large number of credits, 2) a high average grade, and 3) a deep approach to learning.

With regard to the first indicator of quality – study progress – a small number of studies in higher education have shown that, on average, ethnic minority students obtain fewer credits in similar periods of study time (Hofman and Van den Berg 2003; Swail 2003). However, though this achievement gap has been very well-documented in primary and secondary education (see National Centre for Education Statistics, http://nces.ed.gov), little is known about such differences in achievement in tertiary education. This is undoubtedly related to the lack of standardised tests (such as SAT and GMAT) in higher education.

Most research on differences in approaches to studying among different ethnic groups in higher education seem to focus on students from Asian backgrounds (Kember 1996; Kember and Gow 1990; Marton, Watkins and Tang 1997; Purdie and Hattie 1996). For example, when evaluating the Chinese version of the Motivated Strategies for Learning Questionnaire (Pintrich and de Groot 1990), in their comparison of high school students in Hong Kong and the USA, Rao and Sachs (1999) found a high correlation between rote memorisation and metacognitive skills in Chinese students, but not in American ones.

These findings are in line with those of Kember (1996), who found that students with Asian backgrounds in a western educational system adopt a mixed approach, using both deep and surface strategies – an approach that can be characterised by an intention to memorise for understanding. In a study by Blom and Severiens (2008) on secondary school students in the pre-university track, it was found that ethnic minority students, especially girls, more often use deep approaches to learning.

While, as described above, there seems to be some evidence that students from a variety of different cultural backgrounds take different approaches to learning, this area of research is far from complete. Most research focuses on Asian students and is conducted in the context of secondary education. The present study therefore examines approaches to learning in a culturally diverse group of higher education students, and the ways in which processes of integration affect students' approaches to learning.

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Hypotheses and research questions

When Tinto's model is taken as a starting-point, the following links between integration and learning can be expected. While poor social integration – in other words, feelings of social isolation – may hinder good learning, good learning may be fostered by qualitatively good contacts with peers. The same may be true for academic integration. When students are invited into the academic community by their teachers, and the academic world of knowledge is opened to them, it may help students to obtain credits and high grades, and stimulate them to adopt a deep approach to learning. In the present study, we examined these links by comparing ethnic minority and majority students in higher education.

Our research objectives were summarised as follows:

(1) to establish whether ethnic minority students obtain a different number of credits and a different average grade than majority students, and whether their learning approaches differ from those of majority students;
(2) to establish the extent to which, relative to majority students, ethnic minority students are integrated academically and socially; and
(3) to identify the relationships between integration and quality of learning in the group of minority and in the group of majority students.

Method

Participants

At the end of their first year, 523 students from four different universities completed an online version of a questionnaire measuring integration, grades and approaches to learning (response rate 33%: all students were approached through email). Background information on these students is provided in Table 1.

First-year students were chosen because the drop-out rate between the first and second year is relatively high. First-year students (including the 'pre' drop-outs) thus provide the most varied

Table 1. Participant background information: ethnic background, gender, university, department and socio-economic status (SES).

	Frequency	Percentage
Minority	145	27.7
Majority	377	72.0
Missing	1	
Minority male	44	8.4
Majority male	117	22.4
Minority female	101	19.3
Majority female	260	49.8
Missing	1	
University 1	135	25.8
University 2	218	41.7
University 3	125	23.9
University 4	45	8.6
Missing	0	
Faculty of Economics	87	16.6
Faculty of Psychology	333	63.7
Faculty of Law	103	19.7
Missing	0	
Low SES*	83	16.6
Medium SES	95	19.0
High SES	321	64.3
Missing	24	
Total	523	100.0

*SES based on the highest educational level of one of the parents.

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picture of students in higher education. The students were drawn from three different courses (law, economics and psychology) in three institutes of higher education. We chose these specific faculties because they have a relatively large number of minority students. In the academic year 2004/05, 26% of the new students at the three course programs belonged to minority groups. In our sample this percentage is nearly the same (28%), which justifies the assumption that our sample is representative of the population in these three course programs. The students completed the questionnaire online in the spring of 2005.

Ethnic background was defined in line with the definition of the Dutch Society of Statistics: a student was considered to be from a minority if at least one parent was born outside the Netherlands. Most minority students had been born in, or had parents from, Surinam, the Antilles, Morocco or Turkey.

Instrument

Our operational definition of integration was based on an earlier qualitative study conducted in the Netherlands (Severiens, Wolff, and Rezai 2006) which interviewed 138 students from minority and majority backgrounds on their social and academic experiences in different periods during their study. In order to create a valid and reliable instrument in the context of Dutch higher education, we used excerpts from these interviews to develop four sets of items measuring

Table 2. Reliabilities of the scales measuring formal and informal academic and social integration.

Scale	Description and examples	M (sd)
Formal academic integration Alpha = .72 (7 items)	Interaction between teachers and students on university and study-related matters Examples: 'Teachers are always available to answer questions' 'Teachers know my strong points'	2.71 (.74)
Informal academic integration Alpha = .80 (8 items)	Interaction between teachers and students, referring to personal matters Examples: 'Teachers ask me how things are going at home' 'I have good personal contacts with at least one teacher'	2.24 (.76)
Formal social integration Alpha = .79 (8 items)	Interaction among students regarding university and study-related matters Examples: 'Other students approach me to work together on tasks' 'I collaborate well with fellow students'	3.47 (.63)
Informal social integration Alpha = .87 (5 items)	Interaction among students regarding personal matters Examples: 'I hardly know anyone here' 'Fellow students often ask me out'	3.71 (.84)

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formal and informal social and academic integration. Students were asked to rate each of the items on 5-point scales ('not true at all' to 'completely true'). Table 2 provides two examples, the means and standard deviations, and the reliabilities of each of the scales.

The deep approach to learning was measured using an adaptation of the scales 'elaboration', 'organisation' and 'critical thinking' from the Motivated Strategies for Learning Questionnaire (Pintrich 1991). This 14-item scale shows an average of 3.52, with a standard deviation of .54 and a Cronbach's alpha of .79.

Grades were obtained from the students themselves, and the number of credits after one year of study was obtained from the respective student administration offices.

Analyses

To answer the first and second research questions, multivariate analyses of variance were used to show whether there were any differences between minority and majority students with regard to integration, grades, progress and approaches to learning.

The third research question was answered by linear structural modelling analyses (Jöreskog and Sörbom 1993), which were performed twice: once for the group of minority students and once for the majority group. In this way, it was possible to determine whether progress and grades could be explained by integration in different ways: i.e. how integration was related to

the quality of learning in the group of minority students, relative to that in the group of majority students.

This method of structural equation modelling makes it possible to test specific hypotheses about the relationships between the relevant variables. To assess the overall goodness-of-fit of the tested model, three measures are used: the chi-square test statistic (χ^2), the adjusted goodness-of-fit index (AGFI) and the root mean square error of approximation (RMSEA). It has been argued that a value of .08 or less for the RMSEA indicates a reasonable error of approximation (Browne and Cudeck 1992); additionally, according to Bentler (1990), when the goodness-of-fit and comparative goodness-of-fit indexes (CFI) are greater than .90, the analyses indicate adequate fit of the models. It has generally been accepted that χ^2 should be expressed relative to the corresponding degrees of freedom. Among others, Carmines and McIver (1981) suggested that, before rejecting a model as ill fitting, χ^2 should be two or three times greater than the degrees of freedom (Punnett and van der Beek 2000).

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Results

Differences between minority and majority background

A multivariate analysis of variance was conducted to examine possible differences in credits, grades and approaches to learning. These findings are presented in Table 3a and 3b. The multivariate tests regarding differences in integration turned out to be significant for ethnic background as well as for gender (see Table 3a).

Table 3b shows two statistically significant main effects for ethnic background. The first effect concerns the dependent variable credits ($F(1) = 7.209, p < .008$). After one year of study, minority students obtained fewer credits than majority students: i.e. 41 (out of a maximum 60), against an average of 47 in the group of majority students. The second main effect concerns average grade ($F(1) = 5.478, p < .020$), implying a significant difference in grades between minority and majority students. Majority students obtained higher grades; on a scale from 1 to 10, the mean of minority students was 6.31 (sd = 1.18) and the mean of majority students was 6.62 (sd = 1.10). There was no difference regarding the extent to which minority and majority students used the deep approach to learning. Gender differences were observed in the number of credits obtained: in the total group women obtained 48 credits after one year of studying, compared to 39 credits in the male group. Finally, students from high-SES backgrounds obtained more credits than students from low-SES backgrounds (49 in the high SES group vs. 39 in the low SES group).

In a second multivariate analysis of variance, possible differences in integration were considered; see Table 4. The multivariate test in Table 4 shows that there were no differences in integration between students from minority and majority backgrounds, no gender differences, and no differences according to socio-economic background. On formal and informal academic and social integration, each of these different groups scored similarly high (or low).

Although we expected minority students to be less well integrated into the academic community due to their minority position, our results do not enable us to conclude that this was the case.

Table 3a. Multivariate analysis of variance: differences according to ethnic background, gender and SES in credits, grades and deep approaches to learning.

Effect	F	Hypothesis df	Error df	Sig.
Ethnic background	4.181(a)	3.000	460.000	.006
Gender	10.756(a)	3.000	460.000	.000
SES	2.576(a)	3.000	460.000	.053

Table 3b. Tests of between-subjects effects.

Factor	Dependent variable	F	df	Sig.
Ethnic background	Credits	7.209	1	.008**
	Average grade	5.478	1	.020*
	Deep approach	2.217	1	.137
Gender	Credits	28.789	1	.000**
	Average grade	.172	1	.678
	Deep approach	.006	1	.941
SES	Credits	6.530	1	.011*
	Average grade	2.985	1	.085
	Deep approach	1.199	1	.274
Error	Credits		462	
	Average grade		462	
	Deep approach		462	
Total	Credits		466	
	Average grade		466	
	Deep approach		466	

Credits: R Squared = .090.
Average grade: R Squared = .020.
Deep approach: R Squared = .007.

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Relationships between integration and quality of learning

Linear structural modelling analyses were used to examine the ways in which the different types of integration were related to the quality of learning. Given the central focus of the present article on possible differences between minority and majority students, we tested two models. One model showed the relationships in the group of minority students, and the other those in the group of majority students. The hypothesised model tested all possible relationships. Each of the four types of integration was expected to have positive effects on each of the three indicators of learning quality, for both groups of students.

First, the model for minority students was described. A model in which all possible relationships are included fits the data well and can be accepted: chi-square =.70, df = 2, p.70. Furthermore, RMSEA is .00 and the CFI is 1.00, indicating a good fit. Figure 1 shows the paths in the model for minority students. The statistically significant paths are from:

- formal academic integration to grade (standardised coefficient -.32);
- formal academic integration to deep learning (standardised coefficient .27);
- informal academic integration to grade (standardised coefficient .39).

What is remarkable in the accepted model for minority students is that study progress cannot be predicted from integration. It thus appears that the extent to which minority students have

Table 4. Multivariate analysis of variance: differences in integration according to ethnic background.

Effect	F	Hypothesis df	Error df	Sig.
Ethnic background	1.280(a)	4.000	477.000	.277
Gender	1.198(a)	4.000	477.000	.311
SES	.898(a)	4.000	477.000	.465

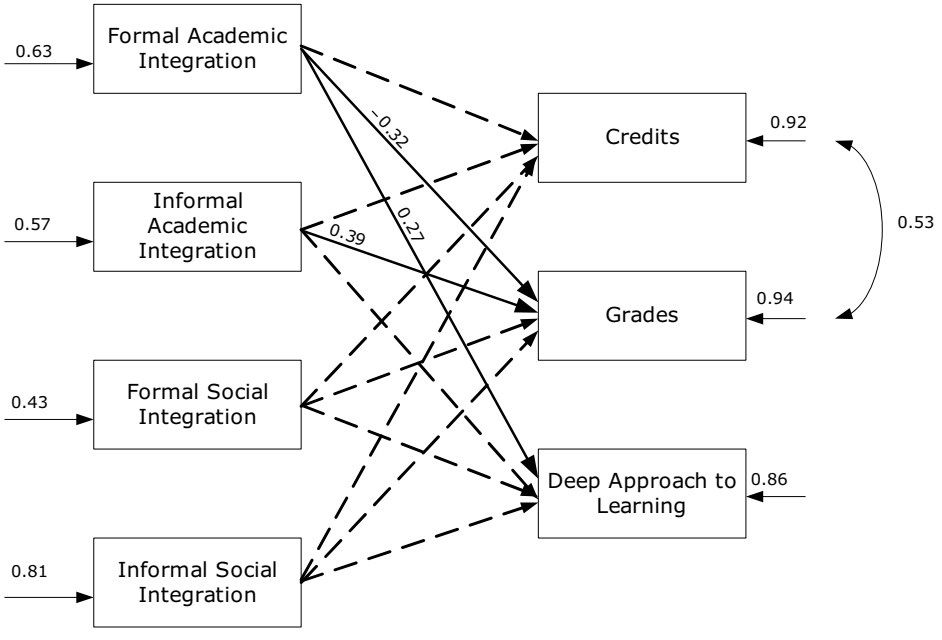

Figure 1. Accepted lisrel model for minority students (chi-square = 0.70, df = 2, p = .70, RMSEA = .00, CFI = 1.00).

high-quality contacts with peers or teachers does not have any consequences on their study progress.

On the other hand, however, grades and deep approaches to learning are related to integration. One of the significant paths to grades suggests that minority students with high-quality formal contacts with their teachers obtain lower grades, something that might be explained if teachers paid more formal attention to minority students with relatively low grades. This interpretation is discussed in more detail in the last section.

The second significant path shows that informal contacts have a positive impact on minority students' grades. If minority students interact with their teachers on an informal basis, it thus appears that they perform better.

Finally, formal academic integration showed a positive relationship with deep learning. So if students report that they have high-quality formal contacts with their teachers, they also use deep approaches to learning more often. In other words, if, as expected, teachers invite their students into the profession they teach about, are available for questions, and are interested in their students' development, minority students feel stimulated to adopt a deep approach to learning.

The model also fits well for the group of majority students. The chi-square was 5.77, with 2 degrees of freedom and a p-value of .056; the RMSEA was .073 and the CFI was .99. The statistically significant paths in the model for majority students were from (see Figure 2):

- formal academic integration to credits (standardised coefficient .25);
- formal academic integration to grade (standardised coefficient .25);
- formal academic integration to deep learning (standardised coefficient .39);
- informal academic integration to credits (standardised coefficient -.38);
- formal social integration to credits (standardised coefficient .26).

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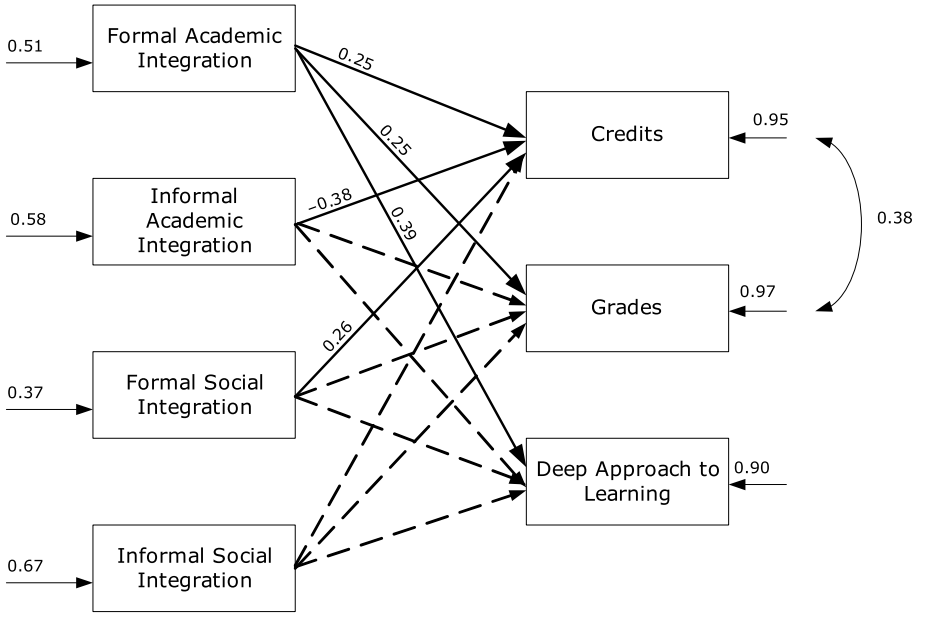

Figure 2. Accepted lisrel model for majority students (chi-square = 5.77, df = 2, p = .056, RMSEA = .073, CFI = .99).

These findings suggest that formal academic integration makes an important contribution to majority students' quality of learning. As well as helping them to obtain a higher number of credits and to obtain higher grades, high-quality contacts with teachers on matters of academic substance stimulate these students to use deep approaches to learning.

Informal academic integration shows a negative path to credits. This meant that, on average, majority students who reported informal interactions with their teachers obtained lower grades than students who did not report such interactions. It is not unlikely that this relationship should be interpreted the other way around: teachers approached majority students with low grades more often than they approached students who performed well.

Finally, majority students who gave a high rating to the quality of collaborative work obtained a larger number of credits. This means that working together with fellow students positively affects majority students' quality of learning.

Discussion

The aim of the present study was to explore the possible differences between integration and quality of learning in two groups of first-year university students, one from the ethnic minorities and one from the Dutch ethnic majority. We particularly hoped to establish whether the higher drop-out rates among ethnic minority students observed in Dutch and international research (see Crul and Wolff 2002; Van den Berg and Hofman 2005), could be described in terms of social and academic integration and the quality of learning.

Our work was based on earlier research in which we had used Tinto's twin concepts of social and academic integration (1998) to study the extent of students' integration, and had also used Tinto's model and description of integration to conduct a detailed qualitative study of the social and academic experiences of Dutch minority and majority students in higher education (Severiens, Wolff, and Rezai 2006). We then used our results to develop an instrument for measuring both

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the formal and informal aspects of social and academic integration. This instrument was used in the present study to examine possible differences in integration and the relation between integration and quality of learning.

Quality of learning was indicated by three measures. Apart from the more obvious indicators such as progress and grades, we included approach to learning, basing this on Marton and Säljö's theoretical framework.

The questionnaire was completed by 523 students, and the responses were analysed using multivariate analyses of variance and of linear structural modelling analyses.

In this final section, we summarise and discuss our main findings and identify some of the research questions that were left unanswered.

Whether ethnic minority students obtain a different number of credits and a different average grade than majority students, and whether their learning approaches differ from those of majority students

The data show general differences in study progress and performance. On average minority students perform somewhat less well, and obtain a lower number of credits, after one year of studying. These results confirm findings in other recent research in the Netherlands (Crul and Wolff 2002; Van den Berg 2002). In terms of grades and credits, minority students apparently acquire lower levels of quality of learning than their majority counterparts.

Students from minority and majority backgrounds do not differ in the extent to which they use the deep approach to learning. Each of these two groups employs the elaboration, organisation and critical thinking strategies to a similar extent.

The extent to which, relative to majority students, ethnic minority students are integrated academically and socially

The four measures of integration reveal no differences according to ethnic background. Minority students thus appeared to be as integrated as their majority counterparts. In other words, the quality of contacts with teachers and peers, both formal and informal, was similar in both groups. As we state in the introduction, former research into integration of majority and minority students shows a variety of results. On this particular point, our study can be added to the list of studies that shows no differences.

The relationships between integration and quality of learning in the group of minority and in the group of majority students

Of the four types of integration, formal academic integration seems to have the most important bearing on the quality of learning. This is true for minority students as well as majority students, but not in the same way. In the group of majority students, formal academic integration was positively related to each of the three indicators of quality of learning. In the group of majority students, good formal contacts with teachers had a positive relation with grades, progress, and the deep approach to learning.

In the group of minority students, however, the impact of formal academic integration seems to be ambiguous. For minority students, high-quality formal interactions with teachers were, as expected, related to the deep approach to learning, but also to low grades.

One possible interpretation for this different set of effects on the quality of learning may lie in a differential reaction of teachers to poor and excellent performing minority and majority students. Teachers working with poorly performing minority students may have a greater

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tendency to approach these students on a formal basis. It seems that teachers asked minority students about their poor performance, discussing solutions and remedial strategies with them only in the context of the learning environment. Teachers who see minority students perform well, on the other hand, may have approached them on an informal basis.

This picture is mirrored in the group of majority students. Teachers with poorly performing majority students seem to leave these students somewhat behind in the classroom, focusing instead on the majority students who perform well. The poorly performing majority students are approached on an informal basis, perhaps because teachers expect 'informal' reasons for their poor performance.

Consequences for the design of the learning environment

At a more general level, the results of the present study show that an equal level (or perceived level) of academic and social integration does not automatically mean that students from different groups perform equally well or share the same experience. Our results indicate that the *same* learning environment can have *different* effects on each group of students, and can set different types of mechanism in motion.

The question is whether these differences are such that the performance of certain groups is structurally poorer, and that the students in question are therefore disadvantaged relative to other groups. And, if so, do existing learning environments need to be reviewed in order to improve the service they provide to *all* students, regardless of their background, ethnic or otherwise? Does extra support by teachers lead to more credits and higher grades for minority students?

We suspect that the negative relationship between formal academic integration and grades among minority students can be explained by the interaction between teachers and poorly performing minority students being more formal: i.e. teachers give more attention to these students. If this extra support turns out to be beneficial, the negative effect of formal academic integration on credits may disappear or even become positive. Unfortunately, this question cannot be answered with our present data.

Future research

Perhaps the most important research question raised by our study concerns the ambiguous relationship between academic integration and the quality of learning. While we have tried to explain this relationship, it needs further exploration. A suitable method for examining the more detailed processes of integration in relation to the quality of learning might be found in a longitudinal qualitative study that aimed to tap students' own conceptualisation of integration, and the links they perceive this to have with study success. Linking educational theories about study progress and theories on acculturation and sociological discussions might also improve insight into the role of Tinto's concepts of integration and study progress (see, for example, Phalet and Andriessen 2003).

Our second suggestion for a research question follows on from the lack of differences we found between the approaches to learning taken by students from various ethnic backgrounds. This did not concur with other research findings in this area: for example, a number of studies observe distinct differences between Asian and American students (see, for example, Rao and Sachs 1999). Possibly, our own results would have been different if we had looked at differences among groups of students. This would require a larger sample in each cultural group, along with a more detailed examination of their approaches to studying.

A third question concerns the possible effects of the learning environment. So far, we have investigated only a few of the concepts and interrelationships in Tinto's model; social and

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academic integration are part of a more complex system. It would be very useful to further investigate the explanatory power of the model. The organisation of the curriculum, teaching methods within the curriculum, and underlying pedagogical ideas about the curriculum (e.g. about dealing with diversity) are factors in Tinto's model that may explain integration and the quality of learning in more detail.

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