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## **Lost in translation : congruency of teacher and student perceptions of assessment as a predictor of intrinsic motivation in ethnodiverse classrooms**

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## Ethnic differences in congruency of teacher-student assessment for learning perceptions and intrinsic motivation<sup>4</sup>

### Abstract

Second generation immigrant students are often more intrinsically motivated for learning than native students. The aim of this study was to examine whether the relationship between perceptions of Assessment for Learning (AfL) and intrinsic student motivation differed between Dutch, Turkish and Moroccan students. It was expected that students who are more language-proficient would be more congruent with their teachers in perceiving AfL, and that teachers who are more efficacious in their teaching would be less congruent with their students. A total of 775 students in 58 classrooms from junior vocational high schools participated in this survey-study. Multi-group multilevel path modelling showed that the explanatory mediation model was invariant across ethnicities, and that students of second generation Turkish and Moroccan descent, despite their lower reported language proficiency, had closer congruency in AfL perceptions with their teacher than Dutch students, related more to their teachers, felt more competent, and were more intrinsically motivated.

### 5.1 Introduction

Many immigrant children and adolescents, supported by their parents, hold a firm idea that school is an important avenue to, or opportunity for social and economic mobility (P. Vedder & Horenzcyk, 2006). This is an important resource for immigrant youth as well as for their community. It is reflected in a school motivation that is generally at par or stronger than the school motivation of their national contemporaries (OECD, 2003). Student motivation is consistently found to positively impact student competency beliefs (Ames & Archer, 1988), perceived school-wellbeing (Kasser & Ryan, 2001), and is an important factor in preventing dropout (Legault et al., 2006). These are all positive consequences of a strong motivation which are particularly important for non-western immigrant students, because hitherto they insufficiently benefit from school: their academic performance is generally lower and rates of school drop-out are higher than of their national peers (OECD, 2003; Suárez-Orozco,

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Suárez-Orozco, & Todorova, 2008). If students' motivation is actually such an important resource, what then might happen to it in schools, when nonwestern immigrant students are less capable of converting it into more successful school careers'.

### **Intrinsic motivation**

The Self-Determination Theory of motivation proposes that students have to satiate "needs" to feel motivated for an educational activity (Deci & Ryan, 1985; Ryan & Deci, 2000). Intrinsic motivation is the tendency to engage in activities for the inherent joy an activity brings, and has been positively linked with persistence, mastery learning goals, deep learning, and well being (Ryan & Deci, 2000). Motivational needs consist, according to SDT, of a feeling of being autonomous, a sense of relatedness with others in the activity, and experiencing the competence to fulfill a given activity. These three needs are characterized by (Jang, 2008) as basic needs and by Chirkov (2009) as culturally invariant. If the basic premise holds that the SDT model of intrinsic motivation is culturally invariant (Chirkov, 2009), then it stands to reason that differing intrinsic motivation between ethnicities should be explained by differing need fulfillment and not also, as suggested by Den Brok (Den Brok, 2001), ethnic variation in their educational values, norms, or needs. Given the importance of the perceived learning environment in explaining intrinsic motivation through need fulfillment, it is expected that ethnic differences should be found either in the perception of the learning environment, or more likely, in the ethnic differences in the relative effects of the perceived learning environment on basic need fulfillment. Noels, Clément and Pelletier (1999) stated that if students perceive the teachers' behavior as supportive and safe, they are more likely to accept their feedback (viz., Van Gennip, Segers, & Tillema, 2010). This led us to contend that provision of formative feedback might well affect intrinsic motivation of immigrant and national students differently.

### **Impact of perceptions of assessment on motivation**

Formative feedback is considered a major tool in enhancing learning (Assessment Reform Group, 2002) but its impacts on students' motivation to learn is dependent on students' needs and past performance (Hattie, 2008; Ryan & Deci, 2000; Vollmeyer & Rheinberg, 2005). Feedback is formative when information is not only given to students as an indication of performance, but when it is used as an instrument to improve students' future learning, as well as the teacher's own teaching (P. Black & Wiliam, 1998a). Formative feedback has been characterized in the Assessment for Learning (AfL) literature by a small set of features which can be labeled as: monitoring and scaffolding (Patel, Tillema, et al., 2011). Monitoring provides the students with feedback information on current states of progress relative to the goals to be attained (i.e., 'where you are'- (Sadler, 2010)) and resembles what is known as 'giving knowledge of results' (Butler & Winne, 1995). Scaffolding is the process of supporting learners to pursue the next steps to enhance further learning by giving directions and advice (Shepard, 2005). Studies on the effects of either way of feedback provision on students' motivation show that both monitoring and scaffolding positively affect motivation (Corbalan, Kester, & Van Merriënboer,

2009; Shute, 2008). In particular, research on scaffolding shows that receiving extra information on how to improve on tasks had a positive influence on motivation (Dresel & Haugwitz, 2008; Shute, 2008). It has become clear that not only the provision of feedback or the perception by students of its provision is important in explaining student motivation, but also whether students and teachers mutually agree on whether and how AfL is practiced in classrooms (Pat-El, Segers, Tillema, & Vedder, 2011).

It is important that the student anticipates teacher instructions and feedback as personal expectations. Student expectations of the teacher's contribution prepare the student for more or less optimal 'absorption' or inclusion of the teacher provided information into the flow of learning. The less congruent teachers and students are in experiencing whether enough information is present to optimize instruction and learning, the less effective instruction and learning will be (Bartholomew et al., 2001; Doyle, 1977; Loughran, 2010; Skinner & Belmont, 1993).

### **Ethnic differences in perceptions of assessment and motivation**

Many studies (e.g., Iyengar & Lepper, 1999; Kaplan & Maehr, 1999; Wong, Eccles, & Sameroff, 2003) found that immigrant students show marked differences in levels of intrinsic and extrinsic motivation compared to native peers, despite lower socio-economic status (Fuligni, 1997; Suárez-Orozco, Rhodes, & Milburn, 2009). It is of interest to identify why immigrants are more motivated in classrooms in the context of the support they receive on their learning (Massey, Gebhardt, & Garnefski, 2009; Wubbels, Den Brok, Veldman, & Van Tartwijk, 2006).

Earlier studies suggest that students do not perceive teacher behavior differently, but rather value it differently. The differential effect of AfL on student motivation is found to be related to the perceived teacher's classroom behavior (P. Black & Wiliam, 1998a; Entwistle & Tait, 1990; Wiliam, 2011). Differences in how perceptions of AfL impact student motivation might be culturally influenced due to cultural differences in (the interpretation of) teacher-student communication (Au & Kawakami, 1994). Congruency between teachers and students on AfL perceptions is more likely when students are proficient in the language of instruction (Pat-El et al., 2010). In the Netherlands, where the current study was conducted, immigrant students generally are less proficient in Dutch, the language of instruction, than their national contemporaries are (OECD, 2010). This could mean that immigrant students run a higher risk of misinterpreting teacher communication, and thus greater misalignment with their teachers. It is possible that despite lower language proficiency of immigrant students, differential effects of perceived teacher behavior might explain their higher intrinsic motivation

Student language proficiency is a likely candidate for explaining misalignments in perceived AfL. Another candidate is teacher efficacy, or teacher beliefs in being able to implement instructional strategies (Pat-El et al., 2010). High teacher efficacy was associated with a larger mismatch in AfL perceptions, which was by a possible self-verifying process (see Swann Jr. et al., 2007, for a review) in which teachers who are confident in their ability to teach might focus more on the feedback they give, and subsequently may overestimate their

students' evaluations of AfL. Even though high teacher efficacy might relate to greater misalignment (Gerges, 2001; Pat-El, Segers, et al., 2011; Pat-El et al., 2010; Wheatly, 2002), teacher efficacy is simultaneously positively linked to student motivation or motivational variables directly (Midgley, Feldlaufer, & Eccles, 1989; Pat-El, Segers, et al., 2011). Whether this complex relationship of teacher efficacy, perception misalignments, and motivation differs across ethnic populations is still unknown, however. High teacher efficacy has been found to positively relate to teacher persistence, resilience, attitude towards student errors (Ashton & Webb, 1986), and patience with students who struggle (Gibson & Dembo, 1984). Given the nature of this function as adaptive to students' needs it is likely that teacher efficacy, as a contextual factor, has a similar relationship for national, as well as immigrant students' perception of AfL practices.

### The current study

This study examines whether differences in the effect of formative feedback on motivation for immigrants and native students can be interpreted from the mediating role of student motivational needs. The research questions that will be answered are: Are there ethnic differences in the perception and the effect of monitoring and scaffolding on students' intrinsic motivation mediated by the basic needs of competence, relatedness and autonomy? And, do either student proficiency in the language of instruction or teacher efficacy or both play a role in explaining possible differences? The theoretical model is presented in Figure 5.1.

## 5.2 Method

### Sample

Students and teachers in junior vocational high schools in the Netherlands took part in this study. The individual students and their teachers were the unit of analysis. Questionnaires were administered in seven schools to 1466 students and 89 teachers. Classes were only included in the analysis whenever they included at least one second generation Moroccan or Turkish student. Students from ethnic groups that were too small to produce stable and reliable model estimates in MSEM were excluded from analyses. These included all first generation immigrants (16 in total), and students from, for example, Belgium, Surinam, and the Antillean islands. Eventually this resulted in a sample of seven schools with 775 students ( $N_{girls} = 386$ ,  $N_{boys} = 355$ , missing = 34) and 58 teachers. The participating teachers represented a broad range of subjects: from arts to sciences. The average class size was 17.6 students ( $SD = 4.88$ ; min = 11; max = 27). Median student age was 13 years (min = 11, max = 18). Over 70% (72.9%;  $N = 565$ ) of the participants were of Dutch ethnicity, 10.8% ( $N = 84$ ) were second-generation Moroccan immigrants, and 16.3% ( $N = 126$ ) were second generation Turkish immigrants.

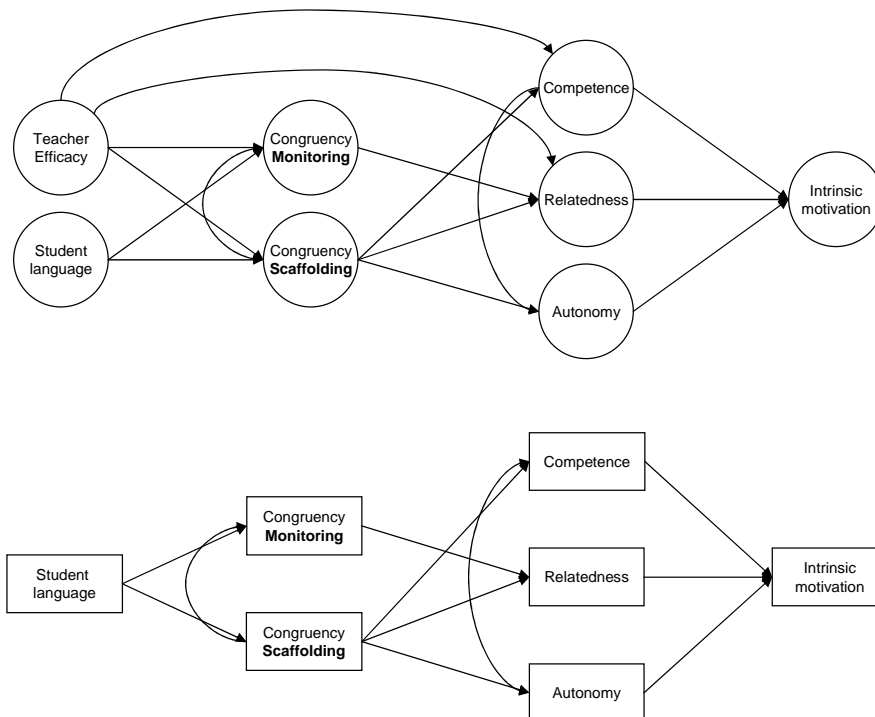


Figure 5.1: Theoretical multilevel model

## Measures

Questionnaires were used to measure AfL perceptions in teachers and students in conjunction with teachers' efficacy for teaching, students' language proficiency, three basic needs for motivation, and their intrinsic motivation. All Likert items response values ranged from 1 (strongly disagree) to 5 (strongly agree), unless otherwise specified.

### Intrinsic motivation.

Intrinsic motivation was measured with the interest/enjoyment scale from the Intrinsic Motivation Inventory (IMI) (McAuley, Duncan, & Tammen, 1989). The scale was translated to Dutch and adapted to measure interest and enjoyment in the class they were being taught at that moment. The scale consisted of 7 Likert scale items. Sample items are: "I would describe this class as very interesting" and "I think this is a boring class" (reversed). In the current study, Cronbach's  $\alpha$  of the 7-item scale was .91.

**Perceived competence.**

The 4-item Perceived Competence Scale (Deci et al., 1981) was translated to Dutch. A sample item is: “I am capable of learning the material in this class.” In the current study, Cronbach’s  $\alpha$  of the 4-item scale was .86.

**Relatedness.**

Relatedness was measured with the 8-item Relatedness scale from the IMI (Deci et al., 1981), which was translated to Dutch and adapted to measure the class they were being taught at that moment. A sample item is: “I feel like I can really trust my teacher”. In the current study, Cronbach’s  $\alpha$  of the 4-item scale was .85.

**Perceived autonomy.**

The 3-item Perceived Autonomy Scale (Martens & Kirschner, 2004) was in Dutch. A sample item is: “I can determine for myself how I work during this class.” In the current study, Cronbach’s  $\alpha$  of the 3-item scale was .67.

**Independent variables****Perception of AfL congruency.**

Perceptions of AfL practices were measured with the Assessment for Learning Questionnaires which consist of both a teacher (TAFL-Q) and a student version (SAFL-Q) (Pat-El, Tillema, et al., 2011). The questionnaire is comprised of two subscales: Monitoring and Scaffolding. All items were scored on 5-point Likert scale items. Differences (i.e., alignment) were computed by subtracting the teacher scores, from the TAFL-Q, from the student scores, from the SAFL-Q. Negative difference scores therefore indicate higher teacher scores, while positive difference scores indicate higher student scores. Items in both the TAFL-Q and the SAFL-Q are worded similarly to enable strict comparisons between the two populations. The Monitoring subscale consisted of 12 items (Cronbach’s  $\alpha = .91$ ). The scale was defined in terms of frequency and form of feedback and how self-monitoring is facilitated. Sample items are “I encourage my students to reflect upon how they can improve their assignments,” and “I discuss with my students how to utilize their strengths to improve on their assignment.”

The Scaffolding subscale consisted of 16 items (Cronbach’s  $\alpha = .87$ ). The scale refers to communication of clear learning goals and criteria, and how those goals and criteria can be met. Sample items are “I ensure that my students know what they can learn from their assignments,” and “I adjust my instruction whenever I notice that my students do not understand a topic.”

**Ethnicity.**

Ethnicity was a categorical variable and defined by country of birth of the student and their parents: when both student and parents were born in The Netherlands, the student’s ethnicity was coded native Dutch. Immigrant students in the sample had very diverse ethnic backgrounds. To allow for meaningful comparisons among groups, only the largest ethnic populations in the



sample, with sufficient  $N$ , were selected for analysis (viz. second generation Turkish and Moroccan students). Students were coded as second generation immigrants when they were born in The Netherlands, but at least one parent was born in another country.

### **Teacher efficacy for instructional strategies.**

Teachers rated their efficacy for teaching on the Ohio State Teacher Efficacy Scale (OSTES) (Tschannen-Morann & Hoy, 1998). The 4-item Efficacy for instructional strategies was translated into Dutch. A sample item is “To what extent can you provide an alternative explanation or example when students are confused” Cronbach’s  $\alpha$  in the present study was .77.

### **Dutch language proficiency.**

Student language proficiency was measured with a self-report scale from the ICSEY study (Berry et al., 2006). Self-reports to determine language proficiency have a high correlation with evaluations of a person’s language proficiency by others (Kirchmeyer, 1993). In the four-item scale students were asked to evaluate how well they were able to read, write, speak, and understand the Dutch language. Scores ranged from 1 (not at all) to 5 (very well). Cronbach’s  $\alpha$  in the present study was .82.

### **Procedure**

Schools were randomly selected across the Netherlands by email and telephone. Of the 31 schools that were approached, 7 agreed to participate in this study. Teachers and their students participated by informed consent. The questionnaire was filled out during one arbitrarily selected course hour in the presence of research assistants, which took teachers and students about 25 minutes. Respondents were assured that their contribution was anonymous. Students received a small reward when they returned their fully completed questionnaire.

### **Analysis**

Multigroup Multilevel Structural Equation Models (MSEM) (Muthén, 1994) were used to compare the fit of the hypothesised model to the different ethnic groups in Dutch schools. The Muthén’s maximum-likelihood-based estimator (MUML) was used, because of its better handling of unbalanced data in contrast to the traditional ML-estimator (Muthén, 1994). The hypothesized model in this study was an 2-(1,1)-(1,1,1)-1 Upper-level mediation model, where the predictor Teacher Efficacy, was a level-2 measure, and all other variables were measured at level-1. The model was tested following a procedure outlined by Preacher, Zhang and Zyphur (2011). Their method is designed to build a MSEM by first determining the need to go multilevel, by calculating Intra-Class-Correlations (ICC’s) of all variables. Generally, in large samples ( $N > 100$ ) ICC’s as low as .01 have been found to strongly inflate type I error rates (Barcikowski, 1981). The second step in the MSEM analysis is testing the fit of a model based on the within-variance of the data, which identifies correlations on the individual level. The model build based on the within data is then used in Step 3, where a model based on the between-variance is added. The

model on the between level shows how level-2 variables interact with the other aggregated variables at level-2. In effect, two models are built and joined: a model at the individual student level, and a model at the classroom level.

To date there is no research available that has determined the appropriate sample size for mediation analysis in a MSEM framework. It has been suggested that 40 level-2 units are appropriate to detect large structural paths at the between level, whereas  $N > 100$  has been suggested to detect small effects (Meuleman & Billiet, 2009).

MSEM was performed on the first data set in MPlus version 7. To interpret a model's fit, the following indicators were used: RMSEA and SRMR below 0.05 and CFI scores above 0.95 indicate good fit (Browne & Cudeck, 1992) and RMSEA and SRMR below .08 and CFI scores above .90 indicate acceptable fit (Hu & Bentler, 1999). CFI is penalized for model complexity, which means that in complex models CFI might drop. A measure that does not penalize large or complex models is the Gamma ( $\gamma$ ) (Fan & Sivo, 2007), which is calculated based on the number of manifest variables, df, and RMSEA, and should have values above .90 for acceptable fit and above .95 for good fit.

Multigroup testing was applied to the tested models to assess structural invariance of the questionnaires between ethnic groups, by evaluating the invariance of variable intercepts between groups (Gregorich, 2006). A critical value of -0.01  $\Delta$ CFI against a configural invariant model will be used to judge invariance (Cheung & Rensvold, 2002). The constraints which are not helpful for the model are released. The final fit of the basic, similar model and that of the separate models for the two groups, are compared on differences.

### 5.3 Results

Prior to analysis the research variables were examined for accuracy of data entry, missing values, and fit between their distributions. No variables had missing values over 5%, and there was no pattern to the missing data (MCAR's  $\chi^2(7) = 8.525, p = .289$ ). Missing values were replaced by EM-estimates (Musil et al., 2002) based on all other research variables in the dataset. No continuous variables deviated from the normal distribution, and no univariate extreme cases ( $> 3 \cdot \text{IQR}$ ) were found. Eleven cases were identified through Mahalanobis distance as multivariate outliers ( $p < .001$ ). As no specific pattern could be discerned, besides combinations of very high and very low scores on several variables, the cases were retained, leaving 775 cases for analysis. Table 1 shows means, standard deviations, and the ICCs of the variables for each ethnic group. ICC ranged from .06 (Morrocan intrinsic motivation) to .48 (Dutch congruency in Monitoring). ICC overall are fairly similar across groups, with the exception of Intrinsic motivation which is highest for the Dutch students (ICC = .33), and lower for the Turkish (ICC = .19) and Moroccan students (ICC = .06). The high ICCs indicate that data are not independent, and that MSEM is necessary for making valid statistical inferences.

Table 5.1: Means, standard deviations and intra class correlations for the total sample and the subsamples.

	Total			Dutch			Moroccan			Turkish		
	M	SD	ICC	M	SD	ICC	M	SD	ICC	M	SD	ICC
Intrinsic motivation	3.05	0.97	0.33	2.94	0.97	0.33	3.24	1.02	0.06	3.43	0.83	0.19
congruency	-0.84	0.95	0.48	-0.93	0.94	0.48	-0.69	1.01	0.48	-0.54	0.86	0.46
Monitoring congruency	-0.60	0.85	0.36	-0.64	0.81	0.36	-0.68	1.04	0.44	-0.39	0.88	0.46
Scaffolding	3.33	0.96	0.07	3.24	0.92	0.07	3.58	1.11	0.12	3.56	0.92	0.11
Competence	3.51	0.77	0.34	3.48	0.77	0.34	3.43	0.80	0.30	3.68	0.77	0.45
Relatedness	3.46	0.89	0.10	3.49	0.86	0.10	3.33	1.02	0.16	3.42	0.93	-0.07
Autonomy	4.39	0.66	0.62	4.46	0.62	0.62	4.23	0.91		4.18	0.59	
Language proficiency	4.25	0.53	-	4.21	0.55	-	4.31	0.48	-	4.25	0.56	-
Teacher efficacy												

Note: Dutch  $N = 565$ , Moroccan  $N = 84$ , Turkish  $N = 126$

### **Ethnic invariance of Congruency of AfL perceptions on intrinsic motivation.**

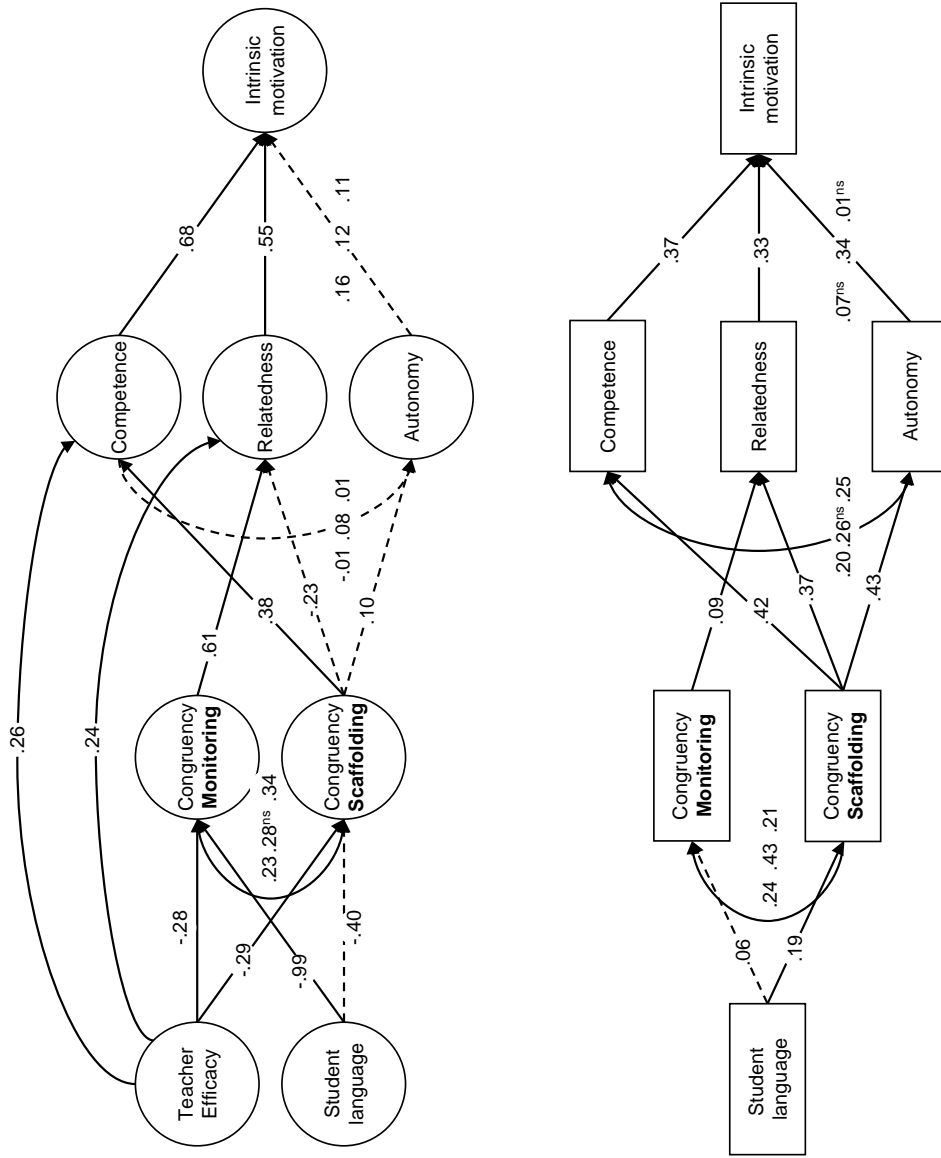
The hypothesized model was tested in Mplus version 7, with all paths and intercorrelations constrained to be equal across the populations. The multilevel-multigroup model was found to be homogeneous across the three populations,  $\chi^2(118) = 175.59$ ; CFI = .95,  $\gamma = .94$ ; SRMR<sub>W</sub> = .03, SRMR<sub>B</sub> = .09, RMSEA = .05, except for the prediction of intrinsic motivation through autonomy, and the intercorrelations between monitoring and scaffolding, and between competence and autonomy. Autonomy's prediction of intrinsic motivation was only significant and strong for the second generation Moroccans. All parameter estimates were invariants across Dutch Turkish and Moroccan students, except for the path between perceived autonomy and intrinsic motivation. The effect between autonomy and intrinsic motivation was significant in the Dutch and Turkish sample, but not in the Moroccan. The model and parameter estimates are summarized in Figure 5.2.

### **Ethnic differences in AfL congruency, basic needs and intrinsic motivation.**

Comparisons between ethnic groups with Tukey HSD corrections showed ethnic differences on key variables, as summarized in Table 1. In agreement with the reported literature and as expected, second generation Turkish ( $M = 3.05$ ,  $SD = 0.97$ ,  $r = .07$ ) and Moroccan students ( $M = 3.24$ ,  $SD = 1.02$ ,  $r = .15$ ) were more intrinsically motivated than Dutch students ( $M = 2.94$ ,  $SD = 0.92$ ). Contrary to our expectations, second generation Turkish ( $M = -0.54$ ,  $SD = 0.86$ ,  $r = .21$ ) students held more teacher-congruent perceptions of Monitoring than Dutch students ( $M = -0.93$ ,  $SD = 0.94$ ), and more teacher-congruent perceptions of Scaffolding ( $M = -0.39$ ,  $SD = 0.88$ ) than Moroccan ( $M = -0.68$ ,  $SD = 1.04$ ,  $r = .15$ ) and Dutch students ( $M = -0.64$ ,  $SD = 0.81$ ,  $r = .15$ ), despite Dutch students ( $M = 4.46$ ,  $SD = 0.62$ ) higher reported ability in the Dutch language than second generation Turks ( $M = 4.18$ ,  $SD = 0.59$ ,  $r = .23$ ) and Moroccans ( $M = 4.23$ ,  $SD = 0.91$ ,  $r = .15$ ). In terms of basic needs Turks ( $M = 3.68$ ,  $SD = 0.77$ ,  $r = .13$ ) felt more related to their teacher than Dutch ( $M = 3.48$ ,  $SD = 0.77$ ) students. Turkish ( $M = 3.56$ ,  $SD = 0.92$ ,  $r = .17$ ) together with Moroccan students ( $M = 3.58$ ,  $SD = 1.11$ ,  $r = .16$ ) felt more competent than Dutch students ( $M = 3.24$ ,  $SD = 0.92$ ). There were no significant differences between the three ethnic groups on perceived autonomy.

## **5.4 Discussion**

The aim of this study was to examine ethnic differences in the relationship between perceptions of Assessment for Learning and student intrinsic motivation. It was expected that ethnic differences in student-teacher agreement on AfL-practice mediated by fulfillment of the three basic needs of motivation, feelings of competence, relatedness and autonomy, would help explain possible differences between native Dutch students and the largest minority groups in the Netherlands.



model.pdf

Figure 5.2: Multilevel multigroup model and parameter estimates. Not-invariant parameters have been split in order of Dutch, Moroccan, Turkish estimates respectively. Dotted lines were not significant in all groups.

The results confirm most of the study's expectations. Second generation Turkish and Moroccan students were more intrinsically motivated than native Dutch students. The theoretical model of how teacher-student congruency in the perception of AfL relates to intrinsic motivation, mediated by basic need fulfillment, was invariant across groups. At the teacher level, the relationship between teacher efficacy, perception congruencies, and basic need fulfillment was equal across the three sampled ethnic groups. The absence of differential effects, except for the relationship between autonomy and intrinsic motivation, between the studied populations implies that this model of motivation is not interactional and that second generation Turkish and Moroccan pupils are very similar to Dutch students in how the variables are interrelated. Differences in motivation could be explained on the basis of differences in the independent variables: Turkish students have a stronger agreement in perceptions relative to their teacher, then Dutch and Moroccan pupils, higher relatedness with their teacher, and a higher intrinsic motivation. Even though the Turkish students report a stronger agreement in AfL perceptions, the Moroccan students' intrinsic motivation is still higher, which might be explained by the stronger relationship between autonomy and intrinsic motivation. Still, our findings are not completely in line with the expectations of this study. It was expected that students who are less proficient in the Dutch language agree less with their teacher about how much AfL is practiced in the classroom, and that this would apply for the second generation immigrants. While we do find that the second generation immigrants report a lower proficiency in the Dutch language, their perceptions of AfL are more congruent with those of their teachers. Given that within the group of second generation Turkish students language still has a negative relation to AfL perception-congruency, which was invariant in relation to the Dutch students, it is likely that some unmeasured confounding factor has a competing, and stronger impact on AfL congruency. It is suggested by Den Brok and colleagues (Den Brok, Tartwijk, Wubbels, & Veldman, 2010) that teacher-student interpersonal relationships are more important for students with a non-Dutch background than for students with a Dutch background, and more important for second generation than for first-generation immigrant students. In our study this differential effect was not replicated, as the relationship between relatedness to the teacher and intrinsic motivation was invariant in our study. These differences might be explained by the different focus: in the study by Den Brok and colleagues' (2010) study, the independent factor was interpersonal teacher behavior (classroom management and harmony of interactions). It is likely that the teachers' interpersonal behavior is differently perceived by students of other ethnicities (Den Brok et al., 2003), which might moderate the relationship between the students' perception of the learning environment and experienced relatedness to the teacher.

### **Limitations**

This study could not fully confirm Chirkov's (2009) finding that the Self-determination theory of basic needs predicting intrinsic motivation was invariant across ethnicities. The relationship between perceived autonomy and intrinsic motivation was not invariant for Dutch students, second generation Turkish and Moroccan students. It would be hasty, however, to dismiss Chirkov's

(2009) findings; even though the Cronbach's  $\alpha$  for the perceived autonomy scale of .67 is acceptable, it still is rather low for a validated scale. Given the small sample size of Moroccans ( $N=84$ ) for path analysis purposes it remains unclear whether lack of invariance was due to power problems or because of theoretical reasons. More focused research is needed to verify the universality of the Self-Determination theory.

Although significant, the effect sizes of the differences between ethnicities range from very weak to weak. Despite the theoretical relevance, the differences are small, and it begs the question: in what way ethnic differences in intrinsic motivation can be addressed by targeting the problem of student-teacher perception incongruencies. It remains unclear whether more pronounced differences are to be expected in different populations of immigrants. It is to be expected that first generation immigrants, and/or immigrants who have not yet acculturated into the host society should differ more from their national peers (Den Brok et al., 2010), but this question would need to be researched with representative samples of both first and second generation immigrants.

### **Implications**

Notwithstanding the study's limitations, and whether ethnic mean differences are considered large enough to be relevant, the results still underline the importance of awareness of cultural differences in responsiveness to classroom practices. If AfL is to integrate assessment with learning and foster student motivation, it is important that students' and teachers' perceptions on the nature and content of the assessment provided are congruent (Bartholomew et al., 2001; Loughran, 2010; Norman, 1986; Pat-El, Segers, et al., 2011). The positive message is that although levels of congruency and intrinsic motivation may vary between ethnic groups, the interrelations do not. Teachers need not be culturally sensitive, but they need to be sensitive and adaptive to student differences irrespective of students' cultural background.

Future research should both try to provide clarifications for the cultural differences in motivation and the role AfL perceptions can play, and in what way educators can be trained to take account of these differences.

