Research in Higher Education (2023) 64:331–348
https://doi.org/10.1007/s11162-022-09705-8

Promoting University Students' Engagement in Intercultural Group Work: The Importance of Expectancy, Value, and Cost

Irene Poort[1] · **Ellen Jansen**[1] · **Adriaan Hofman**[1]

Received: 23 October 2020 / Accepted: 7 June 2022 / Published online: 7 July 2022

Abstract
Intercultural group work (IGW) is a valuable learning strategy to enhance deep learning and prepare university students to participate in a globalized world, so more insight is needed into what motivates students to engage actively in IGW. Using an expectancy–value theory framework, this study investigates the extent to which the different components of this theory (i.e., self-efficacy, perceived benefit, and perceived cost) relate to each other and contribute to student engagement in IGW. Responses to a questionnaire, gathered from 846 bachelor's students from six universities in the Netherlands and Canada, reveal that strong self-efficacy for IGW, high perceived benefit of IGW, and low perceived cost of IGW correlate. In structural equation modeling analyses, self-efficacy and emotional cost emerge as important predictors of behavioral and cognitive engagement; intercultural benefit is critical for cognitive engagement. As a prerequisite of cognitive engagement, behavioral engagement also mediates the effects of self-efficacy, costs, and benefits. Therefore, developing students' self-efficacy, increasing perceived benefits of IGW, and decreasing perceived costs of IGW can promote student engagement and deeper learning. Universities thus should prepare students for IGW and provide support and feedback during group work process. Based on the results, we theorize about the relationships among the components of the expectancy–value theory.

Keywords Intercultural group work · Expectancy–value theory · Self-efficacy · Student engagement · Internationalization of higher education

✉ Irene Poort
i.c.poort@rug.nl

Ellen Jansen
e.p.w.a.jansen@rug.nl

Adriaan Hofman
w.h.a.hofman@rug.nl

[1] Department of Teacher Education, University of Groningen, Groningen, The Netherlands

Introduction

The ongoing globalization that characterizes our world today has resulted in the internationalization of higher education. The number of international students in higher education has increased massively, rising from 2 million in 1998 to 5.3 million in 2017 (Organisation for Economic Co-operation and Development, 2019, 229). Western, mostly English-speaking countries host the majority of these international students; for example, in Australia and Canada, international students account for 31% and 24% of the total student population, respectively (Project Atlas, 2020). Among non-English-speaking countries, the Netherlands has one of the largest shares of internationals students, who represent around 13% of their total student population (Project Atlas, 2020). To support internationalization, universities in the Netherlands actively promote English as the lingua franca (Nuffic, 2014), and an increasing number of bachelor's and master's programs are offered in English only (e.g., University of Amsterdam, 2021). In such programs, both international and Dutch students are studying in a second language.

One particular way students can benefit from such a culturally diverse learning environment is by participating in intercultural group work (IGW); a collaboration of students from different cultural/national backgrounds working on a set task. In higher education, IGW is considered a valuable tool to prepare students for effective and meaningful participation in diverse society. Students with opportunities to collaborate with peers from different cultural backgrounds can develop intercultural collaboration and communication skills (De Hei et al., 2019; Liang & Schartner, 2020). Moreover, exposure to multicultural perspectives helps students broaden their horizons and critically reflect on their own cultural assumptions (Spencer-Oatey & Dauber, 2017). In addition to contributing to personal and intercultural development and growth, IGW can promote deeper learning and better performance. Working in a multicultural group can have positive impacts on problem-solving abilities, creativity, innovation and understanding diverse needs (Curşeu & Pluut, 2013; Denson & Zhang, 2010; Watson et al., 1993). IGW in higher education can simply reflect the reality of doing group work in a program with a culturally diverse student population. However, often university teachers implement IGW with a specific purpose such as developing students' intercultural competences (De Hei et al., 2019), using the diversity as a rich resource in completing an assignment with an international focus (e.g. in international business programs), and providing a variety of perspectives to enable creative thinking for solving complex problems. Accordingly, to benefit from intercultural group work (IGW), students must engage with both the group work assignment and (culturally diverse) group members (Johnson et al., 1991). Entering into dialogue with group members, elaborating on ideas, evaluating different perspectives, exchanging explanations, and reflecting on their own ideas induces high-level cognitive processing and coconstruction of knowledge. This form of collaboration is fundamental to deeper learning (Oxford, 1997; Spencer-Oatey & Dauber, 2017; Summers & Volet, 2010). Working individually on separate sections of a group assignment and then combining these parts is insufficient for deep learning (Summers & Volet, 2010). Thus, engagement is key in reaping the academic and personal benefits of IGW.

To capitalize on the learning benefits of IGW, we need more insight into what motivates students to engage actively in IGW and what leads them to withdraw from engaging. Therefore, we aim to investigate the motivational factors that promote student engagement

in IGW. Insight into these factors can help teachers and curriculum designers create an enhanced student learning environment.

Theoretical framework and previous research

Student engagement

The importance of student engagement is widely accepted and has been researched in a variety of contexts. However, definitions of student engagement and its subdimensions vary (Appleton et al., 2006; Zhoc et al., 2019). We define student engagement as 'the quality of effort students themselves devote to educationally purposeful activities [i.e., group work] that contribute directly to desired outcomes' (Hu & Kuh, 2002, 555). We focus on two subdimensions of engagement: behavioral and cognitive. Behavioral engagement includes attendance, persistence, participation, and preparation for class. Cognitive engagement refers to the mental energy students invest to comprehend complex ideas and master difficult skills (Fredricks et al., 2004; Zhoc et al., 2019). In a group work setting, cognitive engagement includes the critical evaluation of the diverse perspectives and ideas represented in a group (including personal perspective) and the conscious integration of the knowledge that emerges. Behavioral engagement is required to achieve a minimum threshold of learning but is insufficient to reach higher learning goals. Cognitive engagement is vital for deeper learning, higher performance, and study success (Summers & Volet, 2010; Zhoc et al., 2019).

Expectancy–value theory

Expectancy–value theory (EVT) of achievement motivation provides a framework of motivational factors that contribute to student engagement. This theory proposes that people's expectancies about how well they will do on an activity and the extent to which they value an activity affects their choices, their persistence when they face barriers, and their performance (Wigfield & Eccles, 2000). Students who believe they are ill-equipped for effective intercultural collaboration and who do not value the outcomes might withdraw from engaging and persevering in IGW and perform badly on the task. In contrast, when students are confident that they can effectively function in an IGW setting, and they appreciate the value of IGW, they are more likely to engage and be committed to the group work.

Expectancy: can I do this task?

Expectancies are shaped by ability beliefs and perceived task difficulty (Eccles, 1983; Wigfield & Eccles, 2000). Self-efficacy is one way to measure expectancies, because it reflects how individuals weigh their ability beliefs against perceived task difficulties. It refers to the confidence individuals have in their capabilities to organize and execute the course of action required to produce given attainments (Bandura, 1997). People with strong self-efficacy beliefs approach difficult tasks as something they can master and have control over, and they show strong commitment to the challenging goals they set for themselves (Bandura, 1997).

Previous research indicates that a lack of experience with IGW or negative experiences might lead to low self-efficacy for students. When students are exposed to a new academic

environment and new pedagogies, they might lose confidence in their academic abilities, because they are unclear about the expectations of the new learning environment (Gu et al., 2010). Another source of insecurity in an IGW setting can be the intercultural aspect. Having to express oneself in a second language and dealing with different communication styles can lead to decreased student confidence (Frambach et al., 2014; Kim, 2011). First experiences with IGW might be outside students' comfort zones, because there are many new and unknown aspects beyond their control. They cannot depend on their previous experiences, which causes them to feel less confident.

Value: do I want to do this task?

When students consider themselves capable of doing a certain task, it does not automatically lead to committing to that task. If they do not value the outcomes, they might still decide not to engage (Wigfield & Cambria, 2010). Eccles (1983) distinguishes three significant value components (benefits) related to this theory: attainment, intrinsic, and utility. Attainment value refers to the importance of doing well on a task in terms of individual self-schema and personal values. Intrinsic value is the inherent enjoyment a person experiences from doing a task. Utility value pertains to the usefulness of a task in helping the person achieve other short- or long-term goals that may be somewhat unrelated to the task itself (Barron & Hulleman, 2014; Eccles & Wigfield, 1995). Research has identified a variety of benefits resulting from participating in IGW, including helping students produce good quality work, acquire new study skills, develop a global mindset, attain intercultural competences and collaboration skills, acquire an international network, and develop personality traits such as empathy and patience (De Hei et al., 2019; Spencer-Oatey & Dauber, 2017). When students are aware of and experience these benefits and understand how these positively contribute to their short- and long-term goals, they are more likely to invest in the group work process. For example, being able to show future employers proof of intercultural collaboration skills will help students in their future career.

The role of cost

Besides expectancy and value, perceived cost also affects student engagement and perseverance. Eccles (1983) identifies three significant cost components: (1) the amount of effort needed to succeed, (2) the loss of time that could be used to engage in other valued activities, and (3) the psychological cost that results from struggling or failing in the activity. Research on IGW has confirmed that students experience all these cost categories. Due to differences in communication styles, educational backgrounds, and language proficiency, students need more time and effort to collaborate effectively (Moore & Hampton, 2015; Spencer-Oatey & Dauber, 2017). They frequently experience negative emotions, such as fear and insecurity about communicating and voicing their opinions in a group (Frambach et al., 2014; Kim, 2011). In a qualitative study determining the costs and benefits that students attribute to IGW (Poort et al., 2019) we identified a fourth category of cost, related to the need to compromise at the expense of a personal standard. That is, in an IGW setting, students may believe they cannot attain their desired standard of group unity, equality, and a good-quality end product.

In further discussions of the role of cost, Eccles & Wigfield (1995) propose that the three value subcomponents (i.e., attainment, intrinsic, and utility) positively affect the overall value of an activity, and that cost, as a fourth subcomponent, negatively affects it. Thus, individual choices may involve a cost–benefit analysis (Eccles, 1983). Barron & Hulleman (2014) agree that cost affects the overall perceived value but show that it is also linked to expectancy. They propose viewing cost not as a subdimension of value but rather as a significant component that can be combined and interact with both expectancy and value components to determine when someone is optimally motivated. Their analyses of previous EVT-related research show that high expectancy is connected to high value and low cost.

Conceptual model and research questions

We aim to gain insights into the relationships among self-efficacy, cost, and benefit in an IGW setting, as well as how these components affect student engagement in IGW. To explore the role of cost, without necessarily limiting it to being a subcomponent of value, the conceptual model (Fig. 1) shows cost as a separate component, as proposed by Barron & Hulleman (2014). We also posit that behavioral engagement is a basic requirement for cognitive engagement to take place.

Building on this conceptual model, we pose three main research questions:

R.1 To what extent are university students' self-efficacy for IGW, perceived cost of IGW, and perceived benefit of IGW related?

R.2 To what extent do university students' self-efficacy for IGW, perceived cost of IGW, and perceived benefit of IGW contribute to their behavioral and cognitive engagement in IGW?

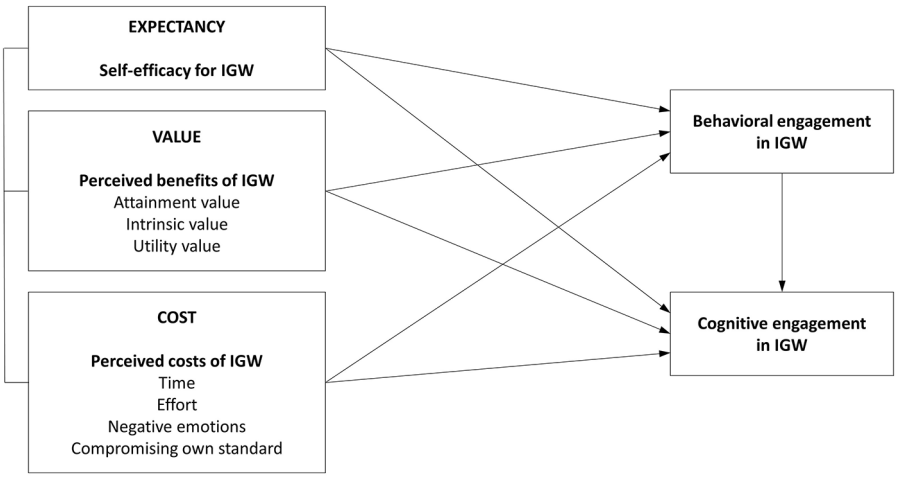

Fig. 1 Conceptual model of relationships among self-efficacy, perceived benefit, perceived cost, and student engagement in IGW

R.3 To what extent does university students' behavioral engagement mediate the effect of self-efficacy for IGW, perceived cost of IGW, and perceived benefit of IGW on their cognitive engagement in IGW?

Method and analysis

Participants

In total, 846 students of 70 nationalities, with men and women approximately equally represented, participated in this study. Ages ranged from 17 to 37 years, with a mean of 20.6 years ($SD = 2.4$). In order to reach students who were participating in IGW at the time of data collection, we recruited participants through our network in the Netherlands and Canada. In this convenience sample we purposely recruited students from a variety of learning environments to represent a broad spectrum of group work experiences. Students were enrolled in internationally oriented, English-taught bachelor's programs at six universities, four located in the Netherlands ($n = 728$) and two in Canada ($n = 118$). Three of which were research universities ($n = 580$) and three universities of applied sciences (professional higher education) ($n = 266$). Students represented a wide variety of disciplines (business, spatial sciences, liberal arts and sciences, science and engineering, education). IGW can take on different forms. To enhance comparability of IGW in the different educational contexts, we specifically considered IGW in which three or more students, representing at least two different nationalities, collaborate on set tasks which are assessed as part of the course. The collaboration took place within or outside the classroom and consisted of face-to-face meetings as well as online communication. The average group size was 5 students. For most students (86.2%), English was not their native or most fluent language. Table 1 contains additional demographic and academic information.

Table 1 Demographic and study data

	n	%
N Total	846	100
Gender	429	50.7
Women	404	47.8
Men	13	1.5
Other/rather not say/missing		
Nationality[a]	605	71.5
European	175	20.7
Asian	43	5.1
North American	11	1.3
African	9	1.1
Latin American & Caribbean	3	0.3
Oceania		
Home or international students[b]	434	51.3
Home students	412	48.7
International students		

[a] Classification of countries according to the United Nations Statistic Division (2019).
[b] Students that hold a passport of the country in which the university is located are considered home students.

Procedure

This study is part of a research project investigating factors that promote university students' engagement in IGW. For this project we invited students who participated in IGW as part of a course requirement to complete a questionnaire. Students were approached either by teachers/coordinators of the programs in which they were enrolled, through an online message board or by the researchers directly. They were assured that their participation was anonymous and voluntary and would have no consequences for their course grades. After giving informed consent, participants answered questions related to their backgrounds and the group work they were doing at that time. They completed the questionnaire on paper or online.

Measures

The data collection included measures for the self-efficacy for IGW, perceived costs of IGW, perceived benefits of IGW, and behavioral and cognitive engagement in IGW. To our knowledge, no existing scales measure these constructs. Therefore, based on existing instruments for different or more general contexts, we developed items representing the subcategories of each measure as listed in Fig. 1. Self-efficacy items are based on measurement instruments developed by Alavi & McCormick (2008) and Pintrich et al. (1991). Cost and benefit items are based on items proposed by Eccles and Wigfield (1995) and Flake et al. (2015), which were tailored to an IGW setting using the results of our qualitative study to identify the specific costs and benefits students attribute to IGW (Poort et al., 2019) Engagement items are based on Wang (2016) and Pintrich et al. (1991). We also pilot tested the initial questionnaire, to clarify items and eliminate redundancies. See Table 3 for examples of items used for the different measures.

Statistical analyses

We followed Kline (2016) to establish the measurement models for each latent variable before examining their structural associations. We obtained factor structures for the predictor and outcome variables using exploratory factor analyses (EFA) on half the data set and examined the model fit using confirmatory factor analyses (CFA) on the other half. We assessed model fit by scrutinizing the residual correlations and model fit indices (Loehlin & Beaujean, 2017; McDonald & Ho, 2002). Indicators suggestive of good/acceptable fit include a root mean square error of approximation (RMSEA) of less than 0.06/0.08, a comparative fit index (CFI) higher than 0.95/0.90, and a standardized root mean square residual (SRMR) less than 0.08/0.10 (Hu & Bentler, 1999; Schweizer, 2010). We did not consider χ^2, because it can mistakenly reject good models with larger sample sizes. To understand the relationships among the predictor variables (R.1), we considered correlations and scatterplots of these factors. To avoid multicollinearity, we combined highly correlated factors into a second-order construct. We conducted additional CFA of the full data set to establish an adequate fit of the modified measurement model, which we used for the structural model. Using M*plus* software version 8.3, we applied structural equation modeling to evaluate the theoretical relationships proposed in Fig. 1 (R.2 and R.3). Furthermore, we examined mediation (R.3) by estimating and evaluating the statistical significance of indirect effects.

For each predictor variable, we determined the percentage mediation by dividing the indirect effects by the total effects (MacKinnon, 2008).

Only minimal missing data occurs for the indicators of the predictor variables (0.1–1.4%) and outcome variables (1.2–3.9%). We applied variance adjusted weighted least squares estimation and followed well-established guidelines for including all available data by applying pairwise deletion (Enders, 2010). For both measurement and structural models, we clustered all analyses according to the course in which each student was enrolled by using the CLUSTER command in M*plus*. This adjusts the standard errors of reported estimates by accounting for non-independence within courses. The purpose of this study is not to compare countries, however, we did include the country in which the university was located as a covariate to account for possible variation across countries.

Results

Relationships among self-efficacy, costs, and benefits, and adjusted measurement model

We conducted both EFA and CFA on a random half of the data set to determine the factor structure of the predictor variables. Considering EFA outcomes and EVT components, we identified six categories: (1) self-efficacy, (2) cost: emotional; (3) cost: time, effort, and compromising own standard; (4) benefit: intrinsic value of IGW; (5) benefit: acquiring intercultural skills and attitudes; and (6) benefit: quality end product. We eliminated items with unclear loadings (that is, items that loaded equally strong on more than one factor) and allowed for correlated errors in cases of similar item wording (two items within category 3 and two items within category 4). The CFA for the full data set indicated a good fit of the six-factor model (RMSEA = 0.028 [90% confidence interval (CI) = 0.025, 0.031], CFI = 0.941, SRMR = 0.049).

The correlations among the different predictor variables (see Table 2) and inspection of the scatterplots reveal a consistent pattern in which self-efficacy correlates positively with the three benefit categories and negatively with the two cost categories. The cost categories correlate negatively with benefits; that is, the higher the perceived cost, the lower the perceived benefit of IGW.

The benefit of a high-quality end product and a good grade strongly correlates with the cost of time, effort, and compromising one's own standard ($r = -.864$). Students who experience process-related costs (e.g., waste of time and effort, disunity, inequality in the group)

Table 2 Correlations among factor scores of predictor variables

	1	2	3	4	5	6
Self-efficacy (1)	-					
Cost: emotional (2)	−0.644	-				
Cost: time, effort, and compromising own standard (3)	−0.484	0.403	-			
Benefit: intrinsic value of IGW (4)	0.618	−0.371	−0.670	-		
Benefit: acquiring intercultural skills and attitudes (5)	0.577	−0.437	−0.542	0.795	-	
Benefit: quality end product (6)	0.466	−0.169	−0.864	0.786	0.625	-

Note: All correlations $p < .01$.

also say that IGW does not contribute positively to the quality of the end product. To avoid multicollinearity, we merged these two categories into a second-order latent variable, 'valuation of process and product,' with a higher score indicating a positive valuation of process and product.

Two categories of benefit, that is, the intrinsic value of IGW and acquiring intercultural skills and attitudes, also show a strong correlation (r=.795). Students who enjoy and are interested in IGW also find that IGW helps them acquire intercultural skills and attitudes, such as developing intercultural competence, becoming a global citizen, correcting stereotypes they have, and acquiring an international network. Because both of these categories strongly represent the specific intercultural aspect of the benefit variable, we merged them into a second-order latent variable, 'intercultural benefit.' Self-efficacy and emotional cost do not correlate strongly with any other predictor variables, so they remain independent categories. The CFA of the modified measurement model for predictor variables achieves good fit (RMSEA=0.029 [90% CI=0.026, 0.032], CFI=0.936, SRMR=0.052).

We again conducted both EFA and CFA on a random half of the data set to establish the measurement model for the outcome variables (i.e., behavioral and cognitive engagement in IGW). The CFA on the full data set indicates good fit (RMSEA=0.049 [90% CI=0.039, 0.059], CFI=0.931, SRMR=0.034). Table 3 provides an overview of the latent measures, example items, scale, number of items, and internal consistency.

Structural model and mediation

After establishing the measurement models, we tested a structural equation model of the effect of self-efficacy, emotional cost, intercultural benefit, and valuation of process and product on behavioral and cognitive engagement, including the role of behavioral engagement as a mediator (see Fig. 2). This model achieved a good fit (RMSEA=0.024 [90% CI=0.022, 0.027], CFI=0.925, SRMR=0.058). Table 4 specifies the direct, indirect, and total effects of the predictor variables on cognitive engagement and the percentage of mediation through behavioral engagement.

Self-efficacy is the strongest positive predictor of behavioral engagement (β=0.370, p<.001), and emotional cost is the strongest negative predictor (β = −0.368, p<.001). The valuation of process and product shows an unexpected negative effect (β = −0.262, p<.001). The intercultural benefit affects behavioral engagement positively (β=0.197, p<.001). Considering the total effects of the predictor variables (Table 4), the intercultural benefit is the strongest positive predictor of cognitive engagement (β=0.504, p<.001), followed by emotional cost (β = −0.290, p<.001), self-efficacy (β=0.249, p<.001), and the valuation of process and product (β = −0.196, p<.001).

The directions of the hypothesized relations with engagement are supported, except for the valuation of process and product, which has a negative coefficient value for both behavioral and cognitive engagement instead of the positive effect expected based on the positive correlations between the valuation of process and product and behavioral and cognitive engagement (r=.230 and r=.452, respectively). This result indicates a suppressor effect that can occur when two predictor variables in the model contain the same information. The high correlation between intercultural benefit and valuation of process and product (r=.833) implies that valuation of process and product does not explain a unique or separate part

Table 3 Latent measures–example items, scale, number of items, and internal consistency

Latent Measure		Example Items	Likert Scale Endpoints	Number of Items	Cron bach'sα
Emotional cost of IGW		In an IGW setting		5	0.759
		…how comfortable do you feel in voicing your opinion?	1 (very comfortable), 5 (very uncomfortable).		
		…how secure do you feel in contributing to the group?	1 (very secure), 5 (very insecure).		
		…how powerful do you feel in influencing the group process and product?	1 (very powerful) 5 (very powerless).		
Emotional cost of IGW		In an IGW setting		5	0.759
		…how comfortable do you feel in voicing your opinion?	1 (very comfortable), 5 (very uncomfortable).		
		…how secure do you feel in contributing to the group?	1 (very secure), 5 (very insecure).		
		…how powerful do you feel in influencing the group process and product?	1 (very powerful) 5 (very powerless).		
Intercultural benefitof IGW[a]	**Intrinsic value of IGW**	How much do you enjoy IGW? How much does IGW interest you?	1 (not at all), 5 (a lot).	2	0.823
	Acquiring intercultural skills and attitudes	How much does IGW help you to …gain intercultural competence? … become an open-minded, global citizen? …develop an international professional network?	1 (not at all), 5 (a lot).	7	0.865
Valuation of process and product[a]	**Process-related cost** (time, effort, and compromising own standard)	In an IGW setting …how efficient is the use of time? …how balanced is the amount of work each group member contributes? …how does the quality of end product line up with your personal standard?	1 (very efficient), 5 (very inefficient). 1 (very balanced), 5 (very unbalanced). 1 (completely lines up), 5 (doesn't line up at all).	8	0.854
	Product-related benefit (quality end product)	How much does IGW help you to …get a good grade? …produce quality work?	1 (not at all), 5 (a lot).	2	0.764
Behavioral engagement in IGW		I actively participate in group meetings. I try hard to do well on the group work assignment. I complete my contributions to the group work assignment in time.	1 (strongly disagree), 7 (strongly agree).	5	0.736
Cognitive engagement in IGW		I try to connect what I am learning to things I have learned before. Ideas of group members contribute to the development of my own ideas. I ask for clarification when a group member shares an idea I don't understand.	1 (strongly disagree), 7 (strongly agree).	6	0.771

[a] Second-order latent measures based on two first-order latent measures.

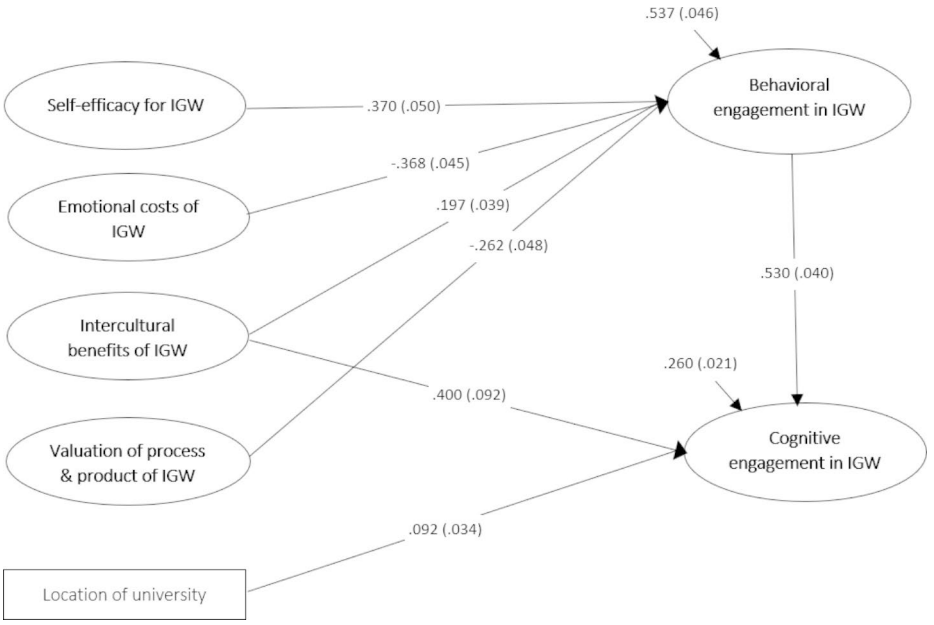

Fig. 2 Structural equation model of self-efficacy, costs, and benefits effecting engagement IGW. All shown paths are significant ($p < .001$). All coefficients are standardized. Model fit: $RMSEA = 0.024$ [90% CI = 0.022, 0.027], $CFI = 0.925$, $SRMR = 0.058$]. R^2: Behavioral engagement = 0.463, and cognitive engagement = 0.740

Table 4 Direct, indirect, and total effects of self-efficacy, emotional cost, intercultural benefit, and valuation of process and product on cognitive engagement

	Direct effect		Indirect Effect through Behavioral Engagement		Total		Percentage Mediated by Behavioral Engagement
	β	SE	β	SE	β	SE	
Self-efficacy for IGW	0.053	0.058	0.196*	0.024	0.249*	0.064	78.7
Emotional cost	−0.095	0.056	−0.195*	0.033	−0.290*	0.060	67.2
Intercultural benefit	0.400*	0.092	0.105*	0.019	0.504*	0.092	20.8
Valuation of process and product	−0.057	0.052	−0.139*	0.024	−0.196*	0.062	70.9

* $p < .01$.

of the variance in engagement, relative to the variance explained by intercultural benefit (Maassen & Bakker, 2001; MacKinnon et al., 2000).

Behavioral engagement is a significant mediator of the effect of all predictor variables on cognitive engagement. A high percentage of the effects of self-efficacy (78.7%), valuation of process and product (70.9%), and emotional cost (67.2%) on cognitive engagement are mediated by behavioral engagement. The effect of intercultural benefit is only mediated 20.8% by behavioral engagement.

The country in which the university is located has a significant effect but only on cognitive engagement ($\beta = 0.092$, $p < .001$). The variables combined explain 46.3% of the variance of behavioral and 74.0% of the variance of cognitive engagement.

Discussion and conclusion

This study confirms that, as proposed by EVT, university students' expectations about their effective participation, perceived benefit, and perceived cost are motivational factors that affect their engagement in IGW. It also shows that the effect of these components differs for behavioral and cognitive engagement.

Self-efficacy

Students' self-efficacy (i.e., expectancy) for IGW is an important contributor to both behavioral and cognitive engagement. The more confidence students have in their ability to contribute effectively to the group process and the end product, the stronger their sense of control. This confidence encourages students to commit to the group by actively participating in group meetings and doing their part of the assignment. It also leads them to engage in higher cognitive thinking, by which students question their ideas and evaluate and integrate new perspectives.

Students with low confidence in their capability to make a difference in an IGW setting instead appear to perceive themselves to be out of control (as if group work happens to them). In line with Bandura (1997), we observe that this lower self-efficacy leads to withdrawal from the group, avoidance of difficult tasks, less commitment to the assignment, and less investment in cognitive processing, which consequently limits deep learning.

Cost of negative emotions

The more negative emotions university students attribute to participating in IGW, the lower their behavioral and cognitive engagement. In IGW, sharing different (cultural) perspectives is a valuable part of the learning process. However, students voicing opinions or expressing themselves in a second language (a reality for an increasing number of university students) might feel uncomfortable. Students may believe they must represent or defend their culture, causing a lot of stress (Poort et al., 2019)(*authors*). To avoid these negative emotions, they might withdraw from the group, both physically (i.e., not attending group meetings) and cognitively (i.e., not participating in the discussion).

Intercultural benefits

Intercultural benefits promote cognitive engagement and, to a lesser extent, behavioral engagement in IGW. Benefits such as gaining intercultural competence, building an international network, becoming a global citizen, understanding their own cultural biases, and enjoyment of IGW are realized when students truly interact and exchange ideas with fellow group members. If students are aware of, and value, the intercultural benefits of IGW, they will cognitively invest. Furthermore, students who cognitively engaged in IGW in the past and experienced intercultural benefits are more likely to engage cognitively in future IGW.

Although behavioral engagement is a basic requirement for effective group work, it does not necessarily involve intercultural interaction, which could explain why perceived intercultural benefits are not a strong predictor for behavioral engagement. Notably, the

intercultural benefit mostly refers to long-term and broader positive outcomes that are not directly related to the assignment. It appears that this kind of benefit is a stronger motivator for university students to engage cognitively than short-term benefits such as receiving a good grade.

Valuation of process and product

In the structural model, the valuation of process and product shows an unexpected negative effect on engagement. However, as discussed in the "Structural model and mediation" section, this result seems to be due to a suppressor effect and therefore we should not conclude that a direct effect contrary to that expected is operating (Maassen & Bakker, 2001). The weak correlations of valuation of process and product with both forms of engagement imply that whether students have been satisfied or dissatisfied with the process and product in the past has minimal consequences, positive or negative, for their engagement in subsequent group work projects.

This variable entails both process-related costs and product-related benefits. The data reveal that students connect a satisfactory process with a satisfactory product. This component could indicate that the quality of the process is necessary to produce a quality product. Alternatively, it could imply that students perceive cost differently, depending on the quality of the end product; when the end product is substandard, students might rate cost more negatively. When they are satisfied with the end product though, they are more likely to view the cost as a worthwhile investment and rate it less negatively.

Role of behavioral engagement

Behavioral engagement is a significant mediator; self-efficacy, emotional cost, valuation of process and product, and intercultural benefits affect the level of behavioral engagement, which then affects the level of cognitive engagement. The percentage of mediation for intercultural benefit is relatively low compared with the other components, which underscores the important role of intercultural benefits as a motivator specifically for cognitive engagement. The results of testing the structural model show that it is plausible that behavioral engagement is a prerequisite for cognitive engagement. However, when students cognitively invest and connect with the group and the assignment, it might also motivate them to be more dedicated to attending group meetings, thus increasing behavioral engagement.

Relationships among EVT-components

This study explores the role of cost in relationship with the other EVT-components. The valuation of process and product variable indicates that students rate the cost of time, effort, and compromises to their standards, according to the benefit they experience. This finding aligns with our previous findings (Poort et al., 2019) (*authors*) that indicate students do not necessarily consider cost bad, as long as there is something to be gained. That is, students consider cost and benefit together. It is not clear, however, if a cost–benefit analysis takes place by weighing 'absolute' benefits against 'absolute' costs.

The emotional cost does not have this link with benefit, but our findings suggest a link between expectancy and emotional cost, which aligns with Barron and Hulleman's (2014)

findings. Self-efficacy and emotional cost have a moderately negative correlation, indicating that the higher the self-efficacy, the lower the emotional cost. Eccles (1983) describes emotional cost as feelings of uncertainty and anxiety related to potential failure. Conceptually, it makes sense that this cost category is connected to self-efficacy, because students with high self-efficacy are less likely to experience these emotions.

There is a consistent pattern among the components, such that high expectancy, high benefit, and low cost are connected. Thus, it is difficult to separate the effects of these components, even if conceptually a clear distinction exists. With our study, we cannot affirm Eccles and Wigfield's (1995) view of cost as a fourth component of value or Barron and Hulleman's (2014) view of a separate cost component. Our results point toward cost being on one end of the continuum and expectancy and benefit on the other end. Specifically, we identify a continuum from high emotional cost to high self-efficacy, and a continuum from low-quality process and product to high-quality process and product.

Implications

To realize the rich potential for deep learning, individual students' engagement in IGW is crucial not only for their personal learning but also for the group. According to our findings, university students' IGW engagement can be promoted by increasing their self-efficacy, increasing the perceived benefits, and decreasing the perceived costs.

From previous higher education research, several causes of low self-efficacy for IGW have emerged: limited language proficiency, not being familiar with group work as a learning tool, not knowing what is expected by teachers and peers, and not knowing how to communicate effectively across cultures (Frambach et al., 2014; Gu et al., 2010). Participating in IGW in itself is insufficient to enhance efficacy beliefs; cognitive processing of the experience is also necessary (Bandura, 1997). More specifically, students' self-efficacy beliefs can be strengthened by reflecting on their IGW experiences, observing and evaluating the group interactions of peers, and by receiving feedback from teachers and peers on successful and less successful interactions. Besides aiding students in actively processing their IGW experiences, universities could also offer students specific training in language proficiency, intercultural communication and collaboration skills, and methods to critically evaluate and incorporate diverse ideas. If students are encouraged to implement these skills in their group interactions and reflect on their experiences, this training could help them become more confident.

Ensuring that students understand the benefit of IGW should increase (cognitive) engagement. However, if students go through group work and do not experience these benefits, it will not enhance their future engagement. Benefits can be increased through teacher support during the collaboration process and by the design of the assignment. If the assignment is set up so that the students need one another to complete it, it will promote collaborative interactions, and the benefit of IGW will become clear.

It is important to consider the emotional costs that students experience. For both home and international students, IGW might be a new educational experience. Students can be unsure about the expectations of the teacher and fellow students in an IGW setting. Clear instructions at the start of the group work assignment can bring some clarity, but as students explore the process of IGW, many more questions arise. Formative feedback by the teacher

and peers during the group work can assure students when they are on the right track and reveal which areas they might need to adjust.

In summary, to promote deep learning through IGW, it is important to have a well-designed group work assignment, clear instructions at the start, and support and reflection during the process. Deliberately including these activities will simultaneously target self-efficacy and perceived costs and benefits. However, such efforts take time, which many university teachers and students believe they do not have, because learning outcomes are often solely defined by an end product. More immediate learning goals take precedent over deeper and long-term learning. Moreover, it is of great importance that a solid foundation for IGW is laid when students first get exposed to diverse learning groups. The first year at university is an important time for students; in this new, diverse learning environment, they will quickly establish new learning habits that set them up for the rest of their higher education studies. If students are expected to effectively and meaningfully collaborate and learn in diverse groups during their studies, extra time and effort needs to be invested into establishing this foundation. This will be a valuable investment from which students will benefit during the rest of their study and it will prepare them to function in our globalized world.

Limitations and recommendations for further research

Our convenience sample was limited to two countries and six institutions. A more extensive sample representing a larger number of countries and institutions would allow for multilevel modelling in which the contribution of the different levels (course, institution, country) and their specific characteristics could be taken into account, thus providing more insight into the contribution of self-efficacy, benefit and cost to engagement in IGW. A larger sample representing specific nationalities/cultural backgrounds would also allow for testing for measurement non-invariance to verify that the same construct is measured across different nationalities/cultural backgrounds.

In the self-reported instrument, the way a student evaluates engagement may differ from 'actual' engagement. Additional observational data would be valuable to measure engagement more objectively and evaluate whether the effects of self-efficacy, costs, and benefits that we found persist. We asked students to complete a questionnaire about self-efficacy, cost, and benefit by reflecting on all the different IGW experiences they had prior to that point. The questions about engagement referred to the group work context in which they were participating currently. Because students completed both these parts on one occasion, their current group work experience likely affected their answers for self-efficacy, costs, and benefits relatively more than previous experiences, which could have evoked stronger relationships than would have emerged if we had measured the parts separately, at a different time.

This study is exploratory in nature; we used newly developed instruments to measure the different constructs, because instruments do not exist yet for the IGW context, and the relationships among these constructs have not been researched before. Further study is needed to increase the robustness of these instruments, and research with other samples could help solidify the conclusions of our study. In turn, this study supports the findings of previous research, namely, that preparation before engaging in IGW and guidance during the process aids student learning (Moore & Hampton, 2015). However, research on the teacher's

role and possible interventions to support effective IGW is limited (Strauss et al., 2011). Interventions to increase student engagement and deep learning should be developed and critically evaluated, in terms of both their effect on the level of student satisfaction and their capacity to support more objective learning outcomes.

Acknowledgements We thank Dr. Richard Sawatzky for providing statistical support.

Funding The authors received no financial support for the research, authorship, and/or publication of this article.

Data Availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Code Availability Not applicable.

Declarations

Conflicts of interest/Competing interests The authors do not have any conflicts of interest to declare.

References

Alavi, S. B., & McCormick, J. (2008). The Roles of Perceived Task Interdependence and Group Members' Interdependence in the Development of Collective Efficacy in University Student Group Contexts. *British Journal of Educational Psychology*, *78*(3), 375–393

Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring Cognitive and Psychological Engagement: Validation of the Student Engagement Instrument. *Journal of School Psychology*, *44*(5), 427–445

Bandura, A. (1997). *Self-Efficacy: The Exercise of Control*. Freeman

Barron, K., & Hulleman, C. (2014). Expectancy-Value-Cost Model of Motivation. In J. Wright (Ed.), *International Encyclopedia of the Social & Behavioral Sciences* (8th ed., pp. 503–509). Elsevier

Curseu, P. L., & Pluut, H. (2013). Student Groups as Learning Entities: The Effect of Group Diversity and Teamwork Quality on Groups' Cognitive Complexity. *Studies in Higher Education*, *38*(1), 87–103

De Hei, M., Tabacaru, C., Sjoer, E., Rippe, R., & Walenkamp, J. (2019). Developing Intercultural Competence through Collaborative Learning in International Higher Education. *Journal of Studies in International Education*, *24*(2), 190–211

Denson, N., & Zhang, S. (2010). The Impact of Student Experiences with Diversity on Developing Graduate Attributes. *Studies in Higher Education*, *35*(5), 529–543

Eccles, J. S. (1983). Expectancies, Values, and Academic Behaviors. In J. T. Spence (Ed.), *Achievement and Achievement Motives* (pp. 75–146). W.H. Freeman and Company

Eccles, J. S., & Wigfield, A. (1995). In the Mind of the Actor: The Structure of Adolescents' Achievement Task Values and Expectancy-Related Beliefs.Personality and Social Psychology Bulletin,215–225

Enders, C. K. (2010). *Applied Missing Data Analysis*. Guilford Press

Flake, J. K., Barron, K. E., Hulleman, C., McCoach, B. D., & Welsh, M. E. (2015). Measuring Cost: The Forgotten Component of Expectancy-Value Theory. *Contemporary Educational Psychology*, *41*(2), 232–244

Frambach, J. M., Driessen, E. W., Beh, P., & van der Vleuten, C. P. M. (2014). Quiet or Questioning? Students' Discussion Behaviors in Student-Centered Education Across Cultures. *Studies in Higher Education*, *39*(6), 1001–1021

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School Engagement: Potential of the Concept, State of the Evidence. *Review of Educational Research*, *74*(1), 59–109

Gu, Q., Schweisfurth, M., & Day, C. (2010). Learning and Growing in a "Foreign" Context: Intercultural Experiences of International Students. *Compare: A Journal of Comparative and International Education*, *40*(1), 7–23

Hu, L., & Bentler, P. M. (1999). Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria Versus New Alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55

Hu, S., & Kuh, G. D. (2002). Being (Dis) Engaged in Educationally Purposeful Activities: The Influences of Student and Institutional Characteristics. *Research in Higher Education*, *43*(5), 555–575

Johnson, D. W., Johnson, R. T., & Smith, K. A. (1991). *Cooperative Learning: Increasing College Faculty Instructional Productivity. ASHE-ERIC Higher Education Report* (no. 4). ERIC

Kim, H. Y. (2011). International Graduate Students' Difficulties: Graduate Classes as a Community of Practices. *Teaching in Higher Education*, *16*(3), 281–292

Kline, R. B. (2016). *Principles and Practice of Structural Equation Modeling. Methodology in the Social Sciences* (4th ed.). Guilford Press

Liang, Y., & Schartner, A. (2020). Culturally mixed group work and the development of students' intercultural competence.Journal of Studies in International Education. doi:101177/1028315320963507

Loehlin, J. C., & Beaujean, A. A. (2017). *Latent Variable Models: An Introduction to Factor, Path, and Structural Equation Analysis* (5th ed.). Taylor & Francis

Maassen, G. H., & Bakker, A. B. (2001). Suppressor Variables in Path Models: Definitions and Interpretations. *Sociological Methods & Research*, *30*(2), 241–270

MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. Lawrence Erlbaum Associates

MacKinnon, D. P., Krull, J. L., & Lockwood, C. M. (2000). Equivalence of the Mediation, Confounding and Suppression Effect. *Prevention Science*, *1*(4), 173–181

McDonald, R. P., & Ho, M. H. R. (2002). Principles and Practice in Reporting Structural Equation Analyses. *Psychological Methods*, *7*(1), 64

Moore, P., & Hampton, G. (2015). `It's a Bit of a Generalisation, but … Participant Perspectives on Intercultural Group Assessment in Higher Education. *Assessment and Evaluation in Higher Education*, *40*(3), 390–406

Nuffic. (2014). Nieuw taalbeleid RUG volgt wereldwijde trend. *Transfer*, *21*(7), 7

Organisation for Economic Co-operation and Development. (2019). *Education at a Glance 2019: OECD Indicators*. OECD Publishing. https://doi.org/10.1787/f8d7880d-en

Oxford, R. L. (1997). Cooperative learning, collaborative learning, and interactions: Three communicative strands in the language classroom. *The Modern Language Journal*, *81*, 443–456

Pintrich, P. R., Smith, D. A. F., Garcia, T., & McKeachie, W. J. (1991). *A manual for the use of the motivated strategies questionnaire (MSLQ)*. National Center for Research to Improve Postsecondary Teaching and Learning: University of Michigan

Poort, I., Jansen, E., & Hofman, A. (2019). Intercultural Group Work in Higher Education: Costs and Benefits from an Expectancy-Value Theory Perspective. *International Journal of Educational Research*, *93*, 218–231

Project Atlas (2020). A quick look at global mobility trends. https://iie.widen.net/s/rfw2c7rrbd/project-atlas-infographics-2020

Schweizer, K. (2010). Some Guidelines Concerning the Modeling of Traits and Abilities in Test Construction. *European Journal of Psychological Assessment*, *26*(1), 1–2

Spencer-Oatey, H., & Dauber, D. (2017). The Gains and Pains of Mixed National Group Work at University. *Journal of Multilingual and Multicultural Development*, *38*(3), 219–236

Strauss, P., U, A., & Young, Y. (2011). 'I Know the Type of People I Work Well with': Student Anxiety in Multicultural Group Projects. *Studies in Higher Education*, *36*(7), 815–829

Summers, M., & Volet, S. (2010). Group Work does Not Necessarily Equal Collaborative Learning: Evidence from Observations and Self-Reports. *European Journal of Psychology of Education: A Journal of Education and Development*, *25*(4), 473–492

United Nations Statistic Division (2019). *Standard country or area codes for statistical use*. Accessed 6 November 2019. https://unstats.un.org/unsd/methodology/m49

University of Amsterdam (2021). Master's programmes. https://www.uva.nl/en/education/master-s/master-s-programmes/masters-programmes.html

Wang, M. T., Fredricks, J. A., Ye, F., Hofkens, T. L., & Schall Linn, J. (2016). The Math and Science Engagement Scales: Scale Development, Validation, and Psychometric Properties. *Learning and Instruction*, *43*, 16–26

Watson, W. E., Kumar, K., & Michaelsen, L. K. (1993). Cultural Diversity's Impact on Interaction Process and Performance: Comparing Homogeneous and Diverse Task Groups. *Academy of Management Journal*, *36*(3), 590–602

Wigfield, A., & Cambria, J. (2010). Students' Achievement Values, Goal Orientations, and Interest: Definitions, Development, and Relations to Achievement Outcomes. *Developmental Review*, *30*(1), 1–35

Wigfield, A., & Eccles, J. S. (2000). Expectancy–Value Theory of Achievement Motivation. *Contemporary Educational Psychology*, *25*(1), 68–81

Zhoc, K. C. H., Webster, B. J., King, R. B., Li, J. C. H., & Chung, T. S. H. (2019). Higher Education Student Engagement Scale (HESES): Development and Psychometric Evidence. *Research in Higher Education*, *60*(2), 219–244