Predicting Online Classroom Engagement by Causality Orientation, Goal Contents, and Organismic Integration Theories

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Abstract

This research endeavor aimed to investigate the extent to which cognitive evaluation and organismic integration theories contribute to accounting for the motivational factors influencing Iranian EFL learners' engagement in online classrooms. To achieve this objective, a survey study was conducted wherein the participants completed four distinct questionnaires pertaining to their classroom engagement, academic motivation, goal contents, and learning self-regulation. The questionnaires utilized in the study were developed by Fredricks et al. (2005), Vallerand et al. (1992), and Black & Deci (2000); Williams & Deci (1996). The sample comprised 200 Iranian intermediate EFL learners, aged between 19 and 25, who were selected based on the convenience sampling technique from Isfahan and Chaharmahal and Bakhtiari Provinces. These participants were both male and female students pursuing their Bachelor's degrees in English at Islamic Azad University. To ensure the homogeneity of their language proficiency, an Oxford Quick Placement Test (OQPT) was administered. The data collection phase involved the distribution of the four questionnaires to the participants electronically via the Google Doc Web application. The collected data underwent a Structural Equation Modeling (SEM) statistical analysis, which revealed that the motivational variables examined in the study exerted a significant influence on online classroom engagement. Consequently, it can be inferred that English language educators who possess knowledge of the potential relationships between online classroom engagement and learners' motivation within the framework of Self-Determination Theory (SDT) can enhance their effectiveness as educational facilitators, supporters, and counselors.

Keywords: Engagement, Motivation, Organismic Integration Theories, Self-Determination Theory

INTRODUCTION

Self-determination theory (SDT), originally proposed by Deci and Ryan (1985), has gained prominence as a theoretical framework for comprehending motivation across various domains, including the realm of second language acquisition (SLA). Particularly in the context of SLA, SDT emphasizes the significance of intrinsic motivation, which pertains to engaging in language learning for personal satisfaction and enjoyment rather than being driven by external rewards or pressures (Ellis, 2015).

Within the sphere of online learning, SDT provides a valuable framework for understanding and nurturing essential aspects of the learning process. Online classroom engagement encompasses a complex interplay of affective, behavioral, and cognitive dimensions. Affective engagement entails students' emotional responses, such as feelings of enjoyment and motivation (Fredricks et al., 2004). Behavioral engagement manifests in active participation, such as contributing to discussions or completing tasks (Fredricks et al., 2004). Cognitively, engagement involves deep processing of learning materials, critical thinking, and the application of acquired knowledge (Azevedo, 2009). Grasping the interconnectedness of these dimensions is crucial for educators as they strive to design engaging online learning experiences that foster positive emotions, stimulate active participation, and facilitate deep learning (Azevedo, 2009).

Given the dynamic nature of online learning environments, students must develop strong self-regulation skills that enable them to navigate challenges and optimize their engagement. Self-regulation refers to the capacity to self-monitor, set goals, plan, and adapt learning strategies independently (Zimmerman, 2008). By cultivating self-regulatory skills, learners can effectively manage their online learning experiences, regulate their motivation, and make informed choices that promote sustained engagement and achievement in this unique educational context.

Self-Determination Theory (SDT)

A Brief History, Definition, and Its Mini Theories

Self-Determination Theory (SDT), developed by Deci and Ryan in 1985, explores the nature of motivation and how individuals are driven to engage in intentional actions. It distinguishes between intrinsic motivation, which arises from within, and extrinsic motivation, which is influenced by external factors. SDT emphasizes the importance of autonomy and self-determination in shaping one's own future. Motivation is seen as the driving force behind behaviors and decision-making processes. SDT is a comprehensive framework that categorizes motivation into autonomous and controlled forms and encompasses six mini-theories dedicated to understanding different aspects of motivation. The present study focuses on two theories related to intrinsic motivation (COT and GCT) and one theory related to extrinsic motivation (OIT) to examine online classroom engagement.

Causality Orientations Theory

Deci and Ryan's seminal work (1985b) investigates the diverse motivational sources that shape students' behavior, focusing on individual differences in personality and students' orientations within educational settings. These orientations can be classified as either self-determined, where students rely on their intrinsic interests, personal goals, and values to guide their actions, or controlled, where students are motivated

by external incentives, social expectations, and internal pressures. Reeve (2012) describes these orientations as autonomy causality orientation and control causality orientation, respectively. Consequently, these orientations give rise to individual differences, with some students exhibiting a strong inclination toward intrinsic motivation, integrated regulation, and identified regulation, while occasionally relying on external regulation and introjected regulation. In contrast, other students demonstrate a predominant reliance on external regulation and introjected regulation but occasionally tap into intrinsic motivation, integrated regulation, and identified regulation (Reeve, 2012).

Goal Contents Theory

The distinction between intrinsic and extrinsic goals, also referred to as intrinsic and extrinsic aspirations, emerged from research highlighting the differential impact of goal pursuit on individuals' motivation and overall well-being (Ryan et al., 1996; Vansteenkiste, Lens, & Deci, 2006). Pursuing intrinsic goals, such as personal growth and meaningful relationships, satisfies fundamental psychological needs and fosters effort and psychological well-being. Conversely, striving for extrinsic goals, such as status, popularity, and material success, neglects basic needs and is associated with adverse outcomes, including anxiety, depression, and physical symptoms. Importantly, even attaining extrinsic goals fails to promote learning and well-being, as evidenced by empirical investigations (Niemiec, Ryan, & Deci, 2009; Vansteenkiste et al., 2006; Vansteenkiste et al., 2008). In contrast, the pursuit of intrinsic goals has been found to facilitate deeper learning, higher performance, sustained persistence, and enhanced psychological well-being in comparison to the pursuit of extrinsic goals (Vansteenkiste et al., 2004a; Vansteenkiste et al., 2004b; Vansteenkiste et al., 2006). This disparity arises from the ability of intrinsic goals to tap into and activate students' internal sources of motivation in ways that extrinsic goals cannot.

Organismic Integration Theory

Organismic Integration Theory (OIT), developed by Ryan and Deci in the 1980s, is a psychological framework within the broader context of self-determination theory. OIT is specifically designed to elucidate how individuals internalize and integrate external regulations and motivations. It provides a theoretical lens through which researchers can explore the processes and outcomes of human motivation in various domains. The level of personal responsibility for their actions varies among students, thus the four categories of extrinsic motivation can be classified on a unilateral scale of self-motivation (Reeve, 2012).

Lack of research on the integration of SDT with other appropriate theories, full-spectrum SDT, and the inclusion of all SDT mini-theories in a single study were identified as research gaps. In addition to methodological gaps such as a lack of qualitative research, the need for a larger sample size, and the improvement of research design through the implementation of longitudinal and time series design, there is a gap in the sample of lecturers. Considering the scarcity of relevant studies, the following research questions and hypotheses were addressed:

RQ1. *Is there any significant relationship between Iranian EFL learners' causality orientations and online classroom engagement?*
RQ2. *Is there any significant relationship between Iranian EFL learners' goal contents and online classroom engagement?*

RQ3. *Is there any significant relationship between Iranian EFL learners' Learning Self-Regulation and online classroom engagement?*

Ho1. *There is no significant relationship between Iranian EFL learners' causality orientations and online classroom engagement.*

Ho2. *There is no significant relationship between Iranian EFL learners' goal contents and online classroom engagement.*

Ho3. *There is no significant relationship between Iranian EFL learners' Learning Self-regulation and online classroom engagement.*

REVIEW OF LITERATURE
Role of Self-Determination Theory in Online Learning Environment
Based on careful consideration and referencing relevant literature, it is clear that Self-Determination Theory (SDT) is the most appropriate framework for understanding motivation in the context of online training. SDT aligns with the key themes of autonomy, relatedness, and competency that are crucial for motivating online learners. The concept of contextual support, which is essential for promoting online learner engagement, is also in line with the Assistance aspect of SDT as discussed by Chen (2009). Moreover, SDT not only describes motivational processes but also offers practical strategies for enhancing motivation. Previous research has shown that teacher actions such as promoting autonomy, providing explanations, and delivering feedback can positively impact students' autonomy, engagement, and academic achievement. Chen's (2009) study further extended the application of SDT to online learning and found support for various aspects of the theory, although not all the principles were fully validated.

Hartnett (2015) and Jacobi (2018) conducted studies that utilized SDT to explore motivation in online learning. Hartnett focused on the psychological needs of autonomy, competence, and relatedness among pre-service teachers, identifying social and contextual factors that hindered the fulfillment of these needs. Jacobi emphasized the importance of autonomy, perceived competence, and relatedness in motivating students in online communication courses. Similarly, Dincer et al. (2019) found autonomy, competence, and relatedness to be pivotal in motivating EFL learners. Chiu (2021) conducted a recent study focusing on the impact of autonomy, competence, and relatedness on student engagement in virtual learning environments. The findings highlighted the significance of effective digital support methods in satisfying students' psychological needs and promoting engagement, with relatedness playing a particularly important role. Creating a sense of connection and community within the virtual learning environment was found to enhance students' engagement levels.

The Construct of Engagement
In the study conducted by Skinner and Pitzer (2012), engagement is defined as the positive and enthusiastic participation in school-related learning activities that encompasses both emotional and cognitive focus. This definition highlights the multidimensional nature of engagement, recognizing the interconnectedness between affective and cognitive aspects of involvement in learning. Cognitive engagement involves active mental effort, concentration, and the use of cognitive strategies, while emotional engagement pertains to the affective experiences and emotions associated with learning. By considering the interplay between cognitive and

emotional factors, researchers and educators can develop a comprehensive understanding of engagement and implement strategies to promote meaningful participation in educational activities. Affective, cognitive, and behavioral engagement are recognized as the three prevalent forms of engagement in classroom-based instruction, emphasizing the importance of engagement in educational settings. Acknowledging these forms of engagement allows for a comprehensive understanding of students' active participation and enables the development of effective pedagogical strategies and engaging learning environments.

Cognitive Engagement

Cognitive engagement is characterized as an active cognitive process involving focused attention and the application of mental effort, often accompanied by the use of self-regulation strategies (Helme & Clarke, 2001). Helme and Clarke identify several indicators of cognitive engagement within the context of collaborative activities. These indicators include actively participating in question-asking and question-responding, engaging in the exchange of ideas, providing feedback, offering instructions or explanations, justifying arguments, and employing nonverbal cues like gestures and facial expressions. Additionally, cognitive engagement can be observed through the presence of private speech and exploratory talk, as highlighted by Barnes (2008) and Mercer and Dawes (2008). These manifestations of cognitive engagement serve as observable signs of students' active cognitive involvement and participation in the learning process.

Behavioral Engagement

Behavioral engagement is often defined as the quantitative measure of students' time spent actively participating in tasks or activities, commonly referred to as "on-task" behavior. Research conducted by Gettinger and Walter (2012) has established a positive association between increased "academic engaged time" and improved learning outcomes, thereby highlighting the significance of behavioral engagement for academic success (Fredricks et al., 2004). In the field of second language acquisition (SLA) research, behavioral engagement has been measured using word counts (Bygate & Samuda, 2009) and turn-taking analyses (Dörnyei & Kormos, 2000) as indicators. However, it is important to note that these measures primarily focus on quantifying observable behaviors, without considering other dimensions of engagement such as cognitive, social, or emotional aspects.

Affective Engagement

Affective engagement encompasses the emotional responses individuals experience in relation to learning activities and is influenced by various factors, including cognitive processes, psychological states, contextual factors, teacher behaviors, and motivation (Pekrun & Linnenbrink-Garcia, 2012). Positive affective engagement is characterized by emotions such as enthusiasm, interest, enjoyment, vitality, and zest, as posited by Ryan and Deci (2008) and Skinner and Pitzer (2012). These emotions reflect a positive and enthusiastic orientation towards learning and signify an affective state conducive to engagement in the educational context.

Student Engagement and Online learning

Learners' engagement is a pivotal construct that holds considerable importance in both educational research and psychological inquiry, as it directly impacts the quality of learning outcomes and academic achievement. Educational systems that lack student engagement encounter notable difficulties in attaining positive educational outcomes (Gunuc & Kuzu, 2015). Particularly in the context of online education, where engagement assumes heightened significance, promoting robust engagement becomes indispensable for facilitating effective learning experiences (Guo et al., 2014). Therefore, prioritizing student engagement is imperative when designing online courses and creating conducive learning environments (Cook et al., 2015).

Engagement and Motivation

Scholarly literature underscores the significance of motivation and engagement in fostering optimal learning outcomes for all students (Woolfolk & Margetts, 2007). Motivation is recognized as a critical factor

that underlies student engagement in the learning process, as it serves as a driving force for active and wholehearted participation in educational endeavors. Student engagement not only yields academic benefits but also contributes to their overall academic achievement (Russell et al., 2005; Ryan & Deci, 2009). This holds particular importance, as authentic engagement has the potential to positively impact a learner's educational attainment throughout their lifespan (Zyngier, 2008).

Rosli et al. (2022) conducted a systematic literature review analysing 49 articles to bridge the knowledge gap. They concluded that SDT research in online learning at university does not extensively integrate other theories and models, and more research should incorporate additional SDT factors such as intrinsic motivation, external regulation, identified regulation, and amotivation in addition to autonomy, competence, and relatedness. As most research samples are students, a research gap involving lecturers and mixed groups is suggested. Rosli et al., further, predicted that quantitative research will dominate this area of inquiry, and qualitative and mixed methods will remain for points of exploration in near future. They also contended that "the prevalence of the Structural Equation Model will persist for at least another decade" and "research will continue to flourish in [Asia]" as it "is home to emerging economies that have studied SDT in online learning" (p.12). Abubakari and Mashoedah (2021) also concluded that future studies should focus on collecting quantitative data from foreign language learners, using the SEM technique to validate the conceptual model and test the hypotheses proposed in studies intended to test empirically the causal relationships between proposed factors that can influence student engagement in online learning, either directly or indirectly. The present study, therefore, formed to fulfill this research gap.

METHOD
Research Design

The present study adopted a survey design, utilizing self-report questionnaires and scales to measure various dimensions of student engagement. The decision to employ this methodology is supported by Henrie et al. (2015), who argued that certain indicators of cognitive engagement, such as strategy use may not be externally observable. Thus, self-reporting becomes crucial in capturing these internal aspects of engagement. The authors further emphasized the value of employing multiple indicators to measure engagement. Similarly, Appleton et al. (2006) contended that self-reporting is the most valid approach for assessing the cognitive and emotional dimensions of engagement. These dimensions primarily revolve around students' perceptions of the learning experience, which are best captured through their own reports. By employing self-report questionnaires, the study aimed to delve into students' emotions, their utilization of cognitive strategies, and their mental energy expenditure. Surveys have employed as the predominant method for assessing the engagement of student in technology-mediated learning environments. As Fredricks and McColskey (2012) note, surveys enable researchers to gain insights into students' subjective experiences, allowing for a deeper understanding of their emotions and cognitive processes. Surveys in comparison to other methods like human observation offer greater convenience in gathering data from a lot of participants. This scalability factor is highlighted by Henrie et al. (2015), who underscore the potential of surveys to improve instructional design and enhance the development of effective educational systems.

Participants

The research's sample consisted of 200 Iranian EFL learners, who were selected using a stratified sampling procedure in Isfahan and Chaharmahal and Bakhtiari Provinces. The participants' age ranged between 19 and 25 years. Both male and female students enrolled in the English Program at Islamic Azad

University were included in the sample, as they pursued their Bachelor's degree. To ensure homogeneity in terms of English language proficiency, all participants underwent an assessment using the Quick Oxford Placement Test (QOPT). This test was employed to evaluate their proficiency level and ascertain that they shared a similar baseline level of English language skills. Furthermore, the participants were actively engaged in online classes conducted and managed by the university. These virtual learning environments served as the primary setting for their English language instruction and formed the context within which their engagement was examined.

By employing stratified sampling, the goal is to ensure the representation of EFL learners from different regions within Isfahan and Chaharmahal and Bakhtiari Provinces. The inclusion of both male and female students pursuing a Bachelor's degree in the English Program at Islamic Azad University aimed to capture a diverse range of perspectives and experiences within the sample. The demographic background of the participants is in the below.

Table 1

Demographic Background of the Participants

Number of Participants	200
Gender	Male and Female
Age	19-25
Native Language	Persian
Target Language	English
Proficiency level	Intermediate

Instruments

The following instruments were used in this study:

Oxford Quick Placement Test (OQPT):

In order to establish homogeneity among the participants in terms of their language proficiency, the OQPT was employed as the initial instrument in this study to determine the participants' level of language proficiency. The test consists of 60 multiple-choice items that assess various language skills. The scoring scale provided by Allen (2004) was used to interpret the participants' scores on the OQPT. Scores ranging from 0 to 10 were classified as a beginner level, while scores between 11 and 17 were considered indicative of a breakthrough level. Additionally, scores between 18 and 29 corresponded to an elementary level, while scores falling within the range of 30 to 40 were indicative of an intermediate level. Scores between 40 and 47 were classified as upper-intermediate, and scores ranging from 48 to 60 were considered as advanced-level proficiency.

To find out the reliability of the OQPT, a pilot study was performed involving a sample of 30 similar students. The reliability coefficient was estimated using the KR-21 formula, resulting in a high reliability index of .91. This indicates that the test demonstrates consistent and reliable measurement of language proficiency among the participants. The high reliability coefficient obtained in the pilot study further supports the dependability of the OQPT as a valid instrument for this purpose.

Questionnaires

To collect the required data for the study, four questionnaires were used. The attributes of the SDT theory were examined through the Engagement Scale, General Causality Orientations Scale, Goals Questionnaire, and Learning Self-Regulation Questionnaire. The learners' online classroom engagement was also evaluated through an adapted scale taken from Fredrick et al. (2005). The following section gives a complete account of the questionnaires.

Engagement Scale (Fredricks et al., 2005)

This study employed the Engagement Scale, originally developed by Fredricks et al. (2005), as a measurement tool for assessing student engagement. The scale encompasses three primary dimensions: cognitive, affective, and behavioral engagement. Participants were asked to rate each item on a five-point Likert scale, ranging from strongly disagree (1) to strongly agree (5). The cognitive engagement subscale comprises eight items designed to assess concentration, effort, and the utilization of cognitive strategies during learning. The affective engagement subscale consists of six items that aim to evaluate emotions such as interest, enjoyment, and motivation. The behavioral engagement subscale includes five items intended to measure observable behaviors, including participation, attentiveness, and persistence.

To assess the internal consistency of the Engagement Scale, Cronbach's alpha coefficients were computed. The results revealed high internal consistency for emotional engagement (Cronbach's alpha = .86), similarly high for cognitive engagement (Cronbach's alpha = .82), and acceptable for behavioral engagement (Cronbach's alpha = .77). These findings suggest that the items within each subscale demonstrate satisfactory reliability as measures of their respective constructs. The utilization of the comprehensive Engagement Scale allows for a thorough evaluation of the distinct dimensions of student engagement. By incorporating cognitive, affective, and behavioral subscales, the scale provides a holistic understanding of students' level of engagement in the learning process. The high internal consistency coefficients for emotional and cognitive engagement indicate the reliability of the scale in measuring these constructs, while the acceptable internal consistency of the behavioral engagement subscale suggests its satisfactory reliability.

General Causality Orientations Scale (GCOS; Deci & Ryan, 1985a):

In this study, the researchers utilized the General Causality Orientation Scale (GCOS) developed by Deci and Ryan (1985a) to measure participants' orientations towards autonomy, control, and impersonal factors in social and achievement-related situations. The GCOS consists of 12 vignettes that describe specific scenarios, followed by three items pertaining to autonomy, control, and impersonal orientation. Participants rate each item on a 7-point scale, indicating their identification with the statements. The vignettes cover a range of social and achievement contexts. The researchers aimed to capture individuals' dispositional tendencies and orientations across different scenarios. The scoring method involves summing the responses to the items corresponding to each orientation, with higher scores indicating a stronger inclination towards

that orientation. The reliability and validity of the GCOS have been established in prior research by Deci and Ryan (1985a). Cronbach's alpha coefficients indicate satisfactory internal consistency for measuring autonomy and control orientations. Test-retest coefficients demonstrate acceptable stability over time. The GCOS provides a robust and comprehensive assessment of participants' orientations towards autonomy, control, and impersonal factors, supported by its reliability and validity.

Goals Questionnaire (Park, 2020):

The Goals Questionnaire, developed by Park (2020), is an instrumental tool designed to effectively assess six distinct goal contents: wealth, fame, affiliation, self-growth, social concern, and leisure. This measurement was administered during the 7th wave of data collection at time 1. Each goal category was evaluated through a set of four items, with participants providing ratings on a 5-point Likert scale ranging from 1 (not at all) to 5 (very much so), indicating the extent to which the specific goal content applied to them. The scores of the four items within each category were averaged, resulting in a composite score representing the strength of the particular goal content.

To evaluate the reliability of the Goals Questionnaire, Cronbach's alpha coefficients were computed. The results revealed a coefficient of .63 for the wealth category, .79 for fame, .72 for affiliation, .68 for self-growth, .72 for social concern, and .67 for leisure. These coefficients indicate the internal consistency of the items within each goal category, with certain categories displaying stronger consistency (e.g., fame) compared to others, which still exhibited acceptable levels of consistency (e.g., wealth, self-growth, social concern, and leisure).

Learning Self-Regulation Questionnaire (SRQ-L; Black & Deci, 2000; Williams & Deci, 1996):

The SRQ-L (Self-Regulation Questionnaire for Learning), developed by Black and Deci (2000) and Williams and Deci (1996), is a valuable instrument utilized to assess the underlying reasons that drive individuals' participation in university classes. Employing a 7-point Likert scale, participants rate the extent to which their reasons for engaging in classes align with their personal experiences. The scale ranges from 1 (not at all true) to 7 (very true), with a neutral midpoint at 4.

The SRQ-L comprises two distinct sub-scales: autonomous motivation and controlled motivation. The items in the questionnaire are allocated to these sub-scales based on the theoretical framework of self-determination theory. Autonomous motivation captures an individual's intrinsic willingness and personal endorsement of their involvement in learning activities. On the other hand, controlled motivation represents external pressures or contingencies that influence an individual's engagement in learning activities. Specifically, items 1, 4, 8, 9, and 10 are attributed to the autonomous motivation sub-scale, while items 2, 3, 5, 6, 7, 11, and 12 contribute to the controlled motivation sub-scale. Participants rate the degree to which each item reflects their reasons for participating in classes. To evaluate the reliability of the SRQ-L, internal consistency measures were computed using Cronbach's alpha coefficients. The autonomous motivation sub-scale demonstrated good reliability, with an alpha coefficient of $\alpha = .78$. Similarly, the controlled motivation sub-scale exhibited acceptable reliability, with an alpha coefficient of $\alpha = .73$. These coefficients indicate the consistency of responses within each sub-scale, suggesting that the items within each sub-scale reliably measure the same underlying construct.

Procedure

In order to investigate the motivation and engagement levels of Iranian EFL learners, a survey was conducted involving a sample of 200 participants. The participants were selected from Isfahan and Chaharmahal and Bakhtiari Provinces during the middle of the spring semester of 1400/2021. Data collection was carried out on a voluntary basis, allowing participants to decide whether or not to take part in the study. The participants were asked to complete the questionnaires and scales utilized in the research. The survey was administered electronically through Google Docs, specifically using the URL: https://docs.google.com/forms.

To accommodate the participants' language preferences, the instruments used in the survey were translated into Persian, which is the participants' first language (L1). The translated instruments underwent a pilot test, where a representative group of individuals was given the translated versions to assess the readability and clarity of the translations. The pilot test aimed to ensure that the participants could comprehend and respond to the questionnaires accurately. By collecting data from 200 Iranian EFL learners in Isfahan and Chaharmahal and Bakhtiari Provinces during the spring semester of 1400/2021, the study aimed to explore the motivation and engagement levels of these individuals. The voluntary participation, informed consent process, and translation of instruments into Persian were crucial steps taken to ensure the ethical conduct of the study and the inclusion of participants from diverse linguistic backgrounds.

RESULTS
Data Analysis
The main objective of this study was to explore the connections between various psychological factors and engagement in online classrooms among EFL learners in Iran. In order to examine these connections, the researchers utilized structural equation modeling (SEM). This statistical technique allowed for the simultaneous measurement of complex relationships among multiple variables. Within this framework, the researchers tested a theoretical model that involved factors such as academic motivation, learning self-regulation, causality orientations, basic psychological needs, goal contents, teacher-student social interactions, and different forms of online classroom engagement (affective, behavioral, and cognitive). By utilizing SEM, the researcher was able to determine the impact of these factors on online classroom engagement. The initial step in the data analysis process entailed evaluating the measurement model, which involved assessing the reliability and validity of the scales used to measure each construct. This was achieved through confirmatory factor analysis (CFA) to ensure that the measurement scales accurately captured the intended constructs. Once the measurement model was established, the researcher proceeded to test the structural model. Regression analyses within the SEM framework were used to examine the relationships between the various constructs and different forms of online classroom engagement. Additionally, potential mediating effects were tested by assessing the indirect effects of independent variables on online classroom engagement through mediating variables.

In addition, to evaluate the general compatibility of the structural model with the data goodness-of-fit assessments were administered. These tests incorporated widely accepted metrics like the chi-square statistic, Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA). A satisfactory model fit indicated that the conceptual model appropriately accounted for the observed data.

Descriptive Findings

This section examines the descriptive findings (mean, standard deviation, minimum and maximum) of the participation scale in the online class, and the dimensions are presented in Table 1)

Table 2

Descriptive Findings of Engagement and its Dimensions

Scale	Minimum	Maximum	Mean	Std. Deviation
Engagement scale	**23**	**91**	**65.48**	**11.38**
Behavioral Engagement	9	25	17.27	3.24
Affective Engagement	6	30	18.89	4.59
Cognitive Engagement	8	40	29.31	5.76

According to Table 2, the total score of engagement was to 65.48 and with standard deviation was 11.38. In Table 3, descriptive findings of Goal Content Scale and its dimensions are presented.

Table 3

Descriptive Findings of Goal Content and its Dimensions

	Minimum	Maximum	Mean	Std. Deviation
Goals Questionnaire	**49**	**92**	**72.49**	**7.24**
Wealth	6	16	12.59	2.27
Fame	6	16	13.08	2.04
Job dependence	4	16	12.59	2.13
Personal growth	8	16	13.95	1.77
Social concern	6	16	12.12	2.50
Entertainment	3	12	8.14	2.15

According to Table 3, the total score of the goal content was 72.49 with a standard deviation of 7.24.

Table 4

Descriptive Findings of Academic Self-Regulation and its Dimensions

	Minimum	Maximum	Mean	Std. Deviation
Learning Self-Regulation Questionnaire	**55.79**	**84.00**	**27.00**	**10.81**
Autonomous Motivation	24.20	35.00	12.00	5.05
Controlled motivation	31.58	49.00	15.00	6.55

According to Table 4, the total score of the self-regulatory educational section was equal to 55.79 with a standard deviation of 10.81.

Table 5

Descriptive Findings of General Causality Orientations and its Dimensions

	Minimum	Maximum	Mean	Std. Deviation
General Causality Orientations	51	298	212.83	25.05
Autonomy	17	102	72.87	9.89
Control	17	97	67.39	8.36
Impersonal	17	102	72.56	9.32

According to Table 5, the total score of General Causality Orientations is 221.83 and the standard deviation 25.05.

Inferential Findings

This section gives a detailed report on inferential analyses conducted in order to test the research hypotheses:

Null-Hypothesis 1: There is no significant relationship between Iranian EFL learners' Causality orientations and online classroom engagement.

Data analysis has been used to investigate the accountability power of causal orientation theory on the component of online classroom engagement. The proposed fitted model is shown in Figure 1. In this model, the components of causality orientations play the role of the independent variable (predictor) and the components of engagement in online class function as the dependent variable (criterion). Regression coefficients are shown above the arrows and error values with the symbol *e* appear in a circle.

Figure 1
Model of the Relationship between Causality Orientations and the Components of Online Classroom Engagement
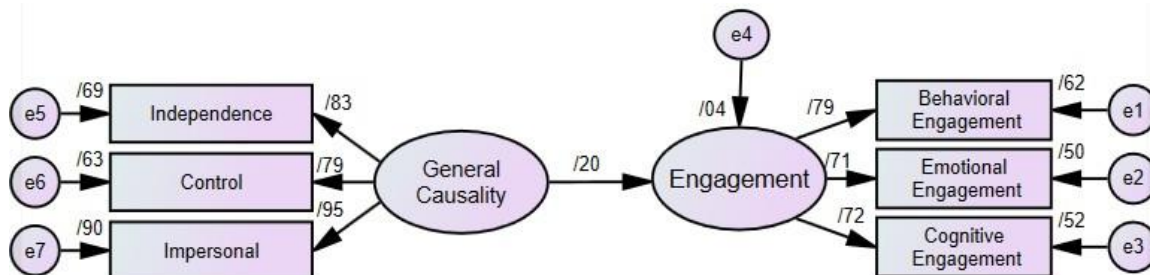
Table 6

Coefficients of the Effect of Causal Orientations Theory on the Components of Online Classroom Engagement

	Standard Estimate	S.E.	C.R.	P
Academic Motivation → Behavioral Engagement	0.16	--	--	--
Academic Motivation → Affective Engagement	0.14	0.11	3.32	0.03
Academic Motivation → Cognitive Engagement	0.15	0.14	4.80	0.02
Academic Motivation → Engagement	0.20	0.02	2.31	0.02

According to Table 6, the effect size of causal orientations on the component of engagement in online class is equal to 0.20, which is significant at the level of 0.05. Also, causal orientations affect the components of behavioral, affective and cognitive engagement with coefficients of 0.16, 0.14 and 0.15, respectively. To determine the adequacy of the proposed model with the data, fit indicators – as shown in the table 7- were used.

Table 7

Fitness indicators of the Model of the Effect of the Theory of Causal Orientations on the Components of Online Classroom Engagement

|	CFI	NFI	IFI	TLI	AGFI	GFI	RMSEA
Model	0.99	0.97	0.99	0.98	0.93	0.97	0.06

According to Table 7, all fitness indicators of the assumed model is higher than the ideal amount and they are at good level which indicates a good fit of the model. This model has a chi-square value of 13.72 and a degree of freedom of 8 at the level of $P < 0.05$ is not meaningful but does not mean that this lack of significance means that there is no difference between the proposed model and the desired model. Thus, the proposed model fits with the desired model; and the theory of causal orientations is effective on the component of online classroom engagement. According to the obtained results, the first null hypothesis is rejected. This result can confirm that the components of general causality have a prediction power for the components of online classroom engagement.

Null-Hypothesis 2: There is no significant relationship between Iranian EFL learners' Goal Contents and online classroom engagement**. (**5 goal contents)

Path analysis has been used to investigate the effect of the theory of goal content on the component of engagement in the online class. The proposed fitted model is shown in Figure 4. In this model, the goal content theory is shown as an independent variable (predictor) and the component of participation in the online class is drawn as a dependent variable (criterion), also regression coefficients are shown above the arrows and error values with the symbol *e* in circles.

Figure 4

Model of the Impact of Goal Content Theory on the Components of Online Classroom Engagement
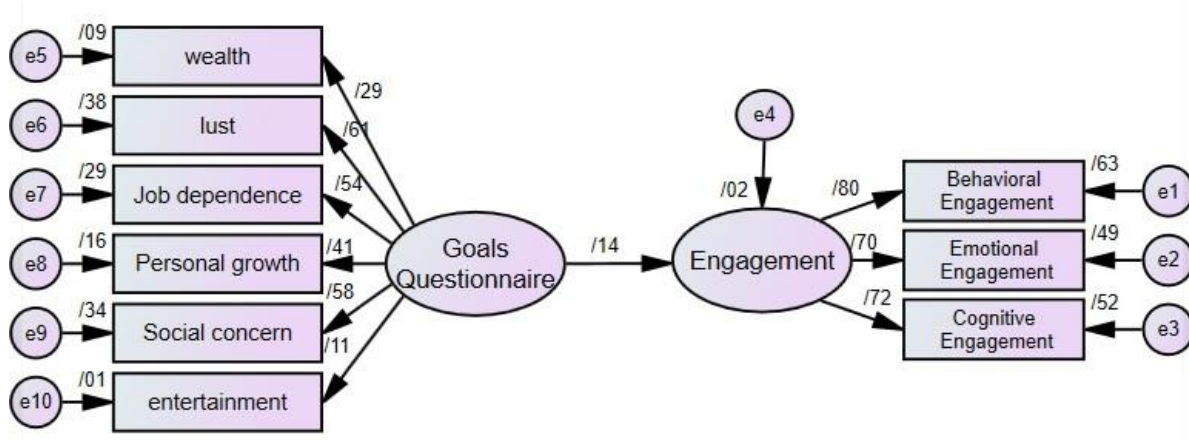
Table 8

Coefficients of the Impact of Goal Content Theory on the Components of Online Classroom Engagement

	Standard Estimate	S.E.	C.R.	P
Goals Questionnaire → Behavioral Engagement	0.11	--	--	--
Goals Questionnaire → Affective Engagement	0.10	1.83	0.57	0.51
Goals Questionnaire → Cognitive Engagement	0.10	1.92	0.63	0.49
Goals Questionnaire → Engagement	0.14	1.74	0.89	0.37

According to Table 8, the impact factor of the goal content on the component of online class engagement is equal to 0.14, which is not significant at the level of 0.05. Also, the goal content has no effect on the components of behavioral, affective and cognitive participation with coefficients of 0.11, 0.10 and 0.10, respectively. To determine the adequacy of the proposed model with the data, fit indicators were used. The results are given in Table 9.

Table 9

Fitness Indices of the Model of the Impact of Goal Content Theory on the Component of Online Classroom Engagement

	CFI	NFI	IFI	TLI	AGFI	GFI	RMSEA
Model	0.86	0.87	0.86	0.90	0.88	0.93	0.09

According to Table 9, all the fit indices of the assumed model are in the ideal amount and at a good level, which indicates a relatively good fit of the model. This model with a chi-square value of 65.79 and a degree of freedom of 26 at the level of P<0.01 is significant, but since this parameter is sensitive to the sample size; the instability of this parameter does not cause a problem in the model.

Thus, the proposed model fits with the desired model and according to the model fit; the goal content theory does not affect the component of online classroom engagement. According to the obtained results, the second null hypothesis is not rejected and it can be stated that the goal content theory does not have an accountability power on the component of online classroom engagement.

Null-Hypothesis 3: There is no significant relationship between Iranian EFL learners' Learning Self-regulation and online classroom engagement.

Path analysis has been used to examine the effect of fundamental integration theory on the components of online classroom engagement. The proposed fitted model has shown in Figure 5. In this model, the theory of fundamental integration in the role of the independent variable (predictor) and the component of online classroom engagement in the role of the dependent variable (criterion) were drawn, as well as regression coefficients above the arrows and error values with the symbol "e" is brought.

Figure 5

Model of the Impact of Organismic Integration Theory on the Online Classroom Engagement Components
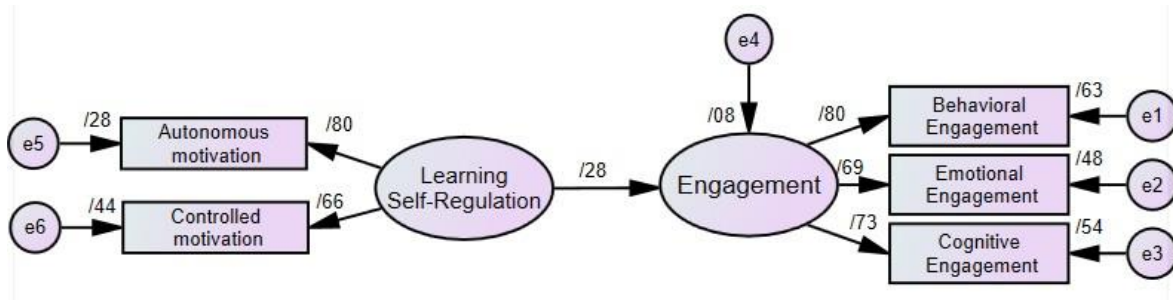
Table 10

Coefficients of the Impact of Organismic Integration Theory on the Online Classroom Engagement Components

	Standard Estimate	S.E.	C.R.	P
Learning Self-Regulation → Behavioral Engagement	0.22	--	--	--
Learning Self-Regulation →Affective Engagement	0.19	0.15	7.77	0.02
Learning Self-Regulation → Cognitive Engagement	0.21	0.22	7.63	0.01
Learning Self-Regulation → Engagement	0.28	0.05	2.29	0.03

According to Table 10, the coefficient of the impact of the basic integration on the component of engagement in the online class is equal to 0.28, which is significant at the level of 0.05. Also, organismic integration affects the components of behavioral, affective, and cognitive participation with coefficients of 0.22, 0.19, and 0.21, respectively. To determine the adequacy of the proposed model with the data, fit indicators were used. The results are given in Table 11.

Table 11

Fitness Indicators of the Model of the Effect of Organismic Integration Theory on the Components of Online Classroom Engagement

	CFI	NFI	IFI	TLI	AGFI	GFI	RMSEA
Model	0.98	0.96	0.98	0.94	0.91	0.98	0.09

According to Table 11, all important indicators of the assumed model are higher than the ideal amount and they are at good position which indicates a good fit of the model. This model with a chi-square value of 36.57 and a degree of freedom of 23 at the level of $p < 0.01$ is significant, but due to the fact that this parameter is sensitive to the sample size, the instability of this parameter does not cause a problem in the model. Thus, the proposed model fits with the ideal model and the theory of integration has an effect on the components of online classroom engagement. According to the obtained results, the third null hypothesis, there is no significant relationship between Iranian EFL learners' learning Self-Regulation and online classroom engagement is rejected confirming the accountability power of the Organismic Integration Theory for online classroom engagement.

DISCUSSION

Addressing Research Question One

The study investigated the relationship between Iranian EFL learners' Causality Orientations and online classroom engagement, including affective, behavioral, and cognitive engagement. The data analysis showed a significant coefficient of influence (0.20, p<0.05) between causality orientations and overall engagement in online classes. Furthermore, causal orientations were found to be related to the specific components of behavioral, affective, and cognitive engagement. These findings support the hypothesis that there is a relationship between Causality Orientations and online classroom engagement. Similar results were observed in previous studies exploring the impact of autonomy/control causality orientation and positive competence-enhancing feedback on intrinsic motivation. Additionally, the relationship between teacher autonomy support, personal best goals, and agentic engagement was found, with personal best goals mediating the association between autonomy support and agentic engagement. These studies provide additional evidence for the connection between causality orientations, autonomy support, and engagement in the educational context.

The findings align well with the self-determination theory (SDT) itself. SDT posits that satisfying the basic psychological needs of autonomy, competence, and relatedness enhances intrinsic motivation and internalizes extrinsic motivation (Ryan & Deci, 2017). The results suggest future research should incorporate these and other SDT factors like amotivation to more fully capture human motivation as conceptualized by

SDT. The results also relate to the technology acceptance model (TAM), which was one of the few theories integrated in the reviewed studies. TAM involves perceived ease of use and perceived usefulness (Granić & Marangunić, 2019). The trend toward integrating acceptance models seen in the results reflects the relevance of users' technology perceptions to their online learning motivation.

The findings of this study are in line with those of Dincer, et al. (2019). Both examined the relationships between causality orientations and classroom engagement based on SDT, providing empirical support for the theory's proposals. The current study specifically investigated these relationships in the context of online learning for Iranian EFL learners. Dincer et al. (2019) also observed connections between causality orientations and engagement dimensions like behavioral/affective/cognitive engagement among EFL learners. However, Dincer et al.'s scope was narrowly focused on a single learner population, while the current study contributed to generalizability by exploring online learning more broadly. Additionally, the current study found causality orientations related to overall online engagement, adding further evidence for links between these constructs. Dincer et al. did not mention overall engagement but provided initial support for connections between the variables of interest. In fact, both studies align with SDT but the current one expanded the scope by including a wider context (online learning generally) versus just EFL learners, contributing additional empirical validation to the model's claims.

Addressing Research Question Two

The second question aimed to reveal the relationship between Iranian EFL learners' Goal Contents and online classroom engagement and the aspect of online classroom engagement (e.g. affective, behavioral, and cognitive engagement) that could be better explained by goal contents. According to Table 8, the coefficient of impact of the goal content on the component of online class engagement was 0.14 ($p < 0.05$). Also, the goal content has no relationship with behavioral, affective, and cognitive engagement components, with coefficients of 0.11, 0.10, and 0.10, respectively. According to the obtained results, the second null-hypothesis was not confirmed; that is, there was no relationship between Iranian EFL learners' Goal Contents and online classroom engagement. The six goal contents assessed in the present study were wealth, fame, affiliation, self-growth, social concern, and leisure.

Goal theory posits that goals influence motivation and behavior. SDT also holds that goals relating to competence, autonomy, and relatedness support intrinsic motivation whereas extrinsic goals undermine it (Ryan & Deci, 2017). The lack of relationship found between goal contents and engagement components does not fully align with these theories. Goal theory and SDT's cognitive evaluation mini-theory would suggest goals linked to growth and relationships could positively influence engagement. The focus on specific goal contents in online language learning, and Iran's sociocultural context, could explain null results if goal priorities differ in these areas versus theories' original work contexts. Further, SDT encompasses more than goals - also needs, regulations, and types of motivation. In conclusion, while conflicting with goal and SDT perspectives, sociocultural contingency and SDT's breadth signify more research utilizing its full framework could advance understanding of motivation in this context (Ryan & Deci, 2017).

The finding of the study that points to the lack of relationship between Iranian EFL learners' goal contents and online classroom engagement dimensions can be compared to Filak and Nicolini (2018) who examined differences in motivation and need satisfaction based on synchronous vs asynchronous course modalities using SDT. Similarly, the current study investigated relationships between goal contents and engagement dimensions. A key similarity is that both studies found no significant relationships between the

variables examined, albeit for different variable pairs - goal contents and engagement dimensions in the current study, versus motivation/needs based on modality in Filak and Nicolini. However, some differences exist - Filak and Nicolini focused specifically on the impact of course modality, while the current study involved goal contents more broadly. Additionally, Filak and Nicolini situated their work entirely within the educational technology context, rather than the broader scope of online learning addressed in the current study. In sum, while neither study found supporting relationships, both investigated SDT perspectives in educational technologies. A difference was Filak and Nicolini's narrower versus the current study's broader focus beyond a single variable.

Addressing Research Question Three

The third research question focused on the relationship between Iranian EFL learners' Learning Self-Regulation and online classroom engagement in terms of affective, behavioral, and cognitive engagement. The results showed a significant coefficient of impact (0.13, $p<0.05$) between learning self-regulation and overall engagement in the online class. Additionally, fundamental integration was found to be related to the specific components of behavioral, affective, and cognitive engagement. The model fit indicators indicated a good fit for the assumed model. These findings confirmed the third null-hypothesis, indicating a relationship between learning self-regulation and online classroom engagement. These findings can be interpreted through the lens of self-regulated learning theory and SDT. Self-regulated learning theory posits that learners' use of metacognitive, motivational and behavioral strategies impacts their academic achievement. Similarly, SDT links aspects like intrinsic motivation and autonomous regulation to enhanced conceptual learning. The discovered relationship between learning self-regulation and overall online engagement aligns with these perspectives. Those better able to self-direct their studies through goal-setting, environment structuring and self-motivation displayed higher engagement. However, contradicting theories, null results were found between goal contents and specific engagement dimensions. Socio-cultural factors like Iran's educational system could account for this, signaling a need for emic approaches. Still, the connection to overall engagement provides preliminary support for theorized links between self-regulation, autonomous forms of motivation and persistence.

Future research incorporating additional SDT dimensions could help elucidate processes in this context. The results can be usefully compared to Dincer et al. (2019) in the following ways: Both examined relationships between components of SDT (causality orientations in the current study, self-determination more broadly in Dincer et al.) and engagement dimensions. The current study specifically focused on these relationships in online language learning, while Dincer et al. investigated a classroom context. Nonetheless, consistent findings were reported, with both observing connections between the SDT variables and engagement. The main difference was context - the current study provided additional context-specific validation of SDT principles for online language education, whereas Dincer et al. focused only on classroom-based language learners.

These results are consistent with previous research conducted by Hagger et al. (2015), which explored the influence of autonomy/control causality orientation and positive competence-enhancing feedback on intrinsic motivation. Their study demonstrated that both autonomy causality orientation and positive competence-enhancing feedback had a positive impact on enhancing intrinsic motivation. Similarly, Benlahcene et al. (2022) examined the association between teacher autonomy support, personal best goals, and agentic engagement. Their findings indicated a significant relationship between students' perceptions of teacher autonomy support, personal best goals, and agentic engagement. Furthermore, personal best goals were identified as a significant mediating factor in the relationship between teacher autonomy support and

agentic engagement. These studies provide additional support for the connection between learning self-regulation, autonomy support, and engagement in the educational context.

CONCLUSION

This study focused on Iranian EFL learners' motivation and engagement in online classrooms using the Self-Determination Theory (SDT) framework. The findings revealed significant relationships between academic motivation, learning self-regulation, causality orientations, and online classroom engagement. However, no significant relationship was found between goal contents and online classroom engagement. Teacher-student social interactions were also found to be closely related to learners' engagement. Engagement was conceptualized as a three-component construct, including behavioral, affective, and cognitive aspects, which aligns with the SDT framework. Previous research has shown that autonomous motivation leads to behavioral and affective engagement, as well as deep cognitive engagement. Teachers play a crucial role in promoting and enhancing student engagement, although monitoring motivation, which is subjective and unobservable, can be challenging. In contrast, engagement is observable and can be monitored by teachers through students' attention, effort, enjoyment, problem-solving, and active participation in class.

The study contributed additional empirical support for tenets of SDT in online learning contexts. Significant relationships were observed between academic motivation, learning self-regulation, causality orientations and basic psychological needs outlined by SDT with overall engagement in online classes. This aligns with SDT perspectives linking autonomous forms of motivation to enhanced engagement. However, no relationship was found between goal contents and specific engagement dimensions. This contrasts with cognitive evaluation theory, which posits goals impact motivation. Sociocultural factors may account for this discrepancy, underscoring need for emic approaches.

Teacher-student interactions also closely linked to learner engagement. This concurs with literature emphasizing the instructor's facilitative role. While motivation is subjective, engagement is observable, allowing teachers to monitor progress through behavioral markers. This suggests expanding teacher supports like the STEP model to include dialogic scaffolds nurturing causality orientations shown to impact motivation. In fact, results provide initial empirical validation of SDT framework utility for online learning motivation. Significant relationships accorded with theory while null findings signaled need for tailored models. Future research incorporating cultural contingency and the full spectrum of SDT elements, such as goal contents and types of regulation, through mixed-methods, could offer more nuanced insight into motivational dynamics for diverse online learners. This presents opportunities to refine theory application for sustainability of online education worldwide.

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