

Self-determined Motivation in Online Language Learning Context: Its Relation to Autonomy Support and Needs Satisfaction¹

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Abstract

This quantitative study examined English as foreign language (EFL) students' motivational orientation, perceived autonomy support, and psychological needs satisfaction in online education. Besides, the relationship between the above-mentioned variables was examined to test the hypothesis derived from the Self-Determination Theory. It was hypothesized that the autonomy-supportive environment in online English learning increased students' psychological need satisfaction and helped students have more autonomous motivation. The participants were 123 sixth and seventh grade students in a secondary school. The following scales were used to answer the research questions: the Language Learning Orientations Scale (LLOS), Learning Climate Scale (LCS) and Activity-Feeling Scale (AFS). The data were analyzed through the SPSS and AMOS software. The results indicated that the identified regulation was the center of motivational orientation in online English learning. Moreover, students believed their teacher was autonomy-supportive, and their psychological needs were met. Additionally, it was found that EFL students with autonomous motivation perceived their teacher as more autonomy-enhancing than students with controlled motivation. On the other hand, students' perceptions of their psychological needs did not change according to their self-determination level. Finally, the results showed that the satisfaction of psychological needs played an intermediary role between the autonomy support of teachers and the motivational orientation of students in online English learning. As a suggestion, further studies could use a longitudinal approach to provide a concise explanation for the persistent state of relatedness and autonomy in online learning. In addition, the generalizability of this study can be increased by collecting data from different regions, grade levels and cultures.

Resumen

Este estudio cuantitativo examinó la orientación motivacional, el apoyo a la autonomía percibido y la satisfacción de las necesidades psicológicas de los estudiantes de inglés como lengua extranjera (EFL) en la educación en línea. Además, se examinó la relación entre las variables mencionadas anteriormente para probar la hipótesis derivada de la Teoría de la Autodeterminación. Se planteó la hipótesis de que el entorno de apoyo a la autonomía en el aprendizaje de inglés en línea aumentó la satisfacción de las necesidades psicológicas de los estudiantes y ayudó a los estudiantes a tener una motivación más autónoma. Los participantes fueron 123 estudiantes de sexto y séptimo grado en una escuela secundaria. Se utilizaron las siguientes escalas para responder a las preguntas de investigación: la Escala de Orientaciones de Aprendizaje de Idiomas (LLOS), la Escala de Clima de Aprendizaje (LCS) y la Escala de Actividad-Sentimiento (AFS). Los datos se analizaron a través del software SPSS y AMOS. Los resultados indicaron que la regulación identificada era el centro de la orientación motivacional en el aprendizaje de inglés en línea. Además, los estudiantes creían que su profesor apoyaba la autonomía y que sus necesidades psicológicas se satisfacían. Además, se encontró que los estudiantes de EFL con motivación autónoma percibían a su profesor como más promotor de la autonomía que los estudiantes con motivación controlada. Por otro lado, la percepción de los estudiantes sobre sus necesidades psicológicas no cambió según su nivel de autodeterminación. Finalmente, los resultados mostraron que la satisfacción de las necesidades psicológicas desempeñó un papel intermedio entre el apoyo a la autonomía del profesorado y la orientación motivacional de los estudiantes en el aprendizaje de inglés en línea. Se sugiere que estudios futuros podrían utilizar un enfoque longitudinal para proporcionar una explicación concisa del estado persistente de conexión y autonomía en el aprendizaje en línea. Además, la generalización de este estudio puede aumentarse mediante la recopilación de datos de diferentes regiones, cursos y culturas.

Introduction

The global outbreak of Covid-19 at the beginning of 2020 disrupted traditional educational systems, prompting a shift toward online learning in K-12 and higher education institutions. This shift aimed to ensure continuity in education while adhering to public health mandates. However, the rapid transition unveiled long-standing challenges inherent in online education, such as student disengagement, behavioral issues, and increased dropout rates (Deng & Yang, 2025; Spitzer et al., 2021). These challenges, although not new, were magnified in the online learning context and prompted a surge in scholarly efforts to explore underlying causes and potential interventions.

¹ This is a refereed article. Received: 2 February, 2023. Accepted: 5 August, 2023. Published: 19 September, 2025.

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Among the key elements influencing success in online learning, student motivation emerged as a central determinant of engagement, persistence, and academic performance (Akpen et al., 2024; Fu et al., 2024). Due to the self-directed and often isolating nature of online education, learners are required to possess a higher degree of autonomous motivation to remain committed and perform effectively. Yet, there remains limited understanding of the specific factors shaping motivational quality, especially among English as a Foreign Language (EFL) learners in online settings.

Self-Determination Theory (SDT), proposed by Deci and Ryan (1985), offers a comprehensive framework to analyze human motivation by focusing on the satisfaction of three basic psychological needs—autonomy, competence, and relatedness. According to SDT, when these needs are met through supportive social environments, individuals tend to exhibit more autonomous forms of motivation, leading to greater well-being, engagement, and achievement (Ryan & Deci, 2000, 2017). Within educational contexts, teacher behaviors play a pivotal role in either supporting or undermining these needs. An autonomy-supportive teaching style fosters inner motivational resources, whereas a controlling style can lead to disengagement, amotivation, and even psychological distress (Assor et al., 2002; Reeve, 2006).

Although a large number of SDT-based studies have been conducted in face-to-face classroom settings, there are only some studies examining student motivation and its association with psychological need satisfaction and teacher autonomy support in online learning (Chen & Jang, 2010; Chiu, 2022; Filak & Nicolini, 2018; Hsu et al., 2019; Russell, 2013; Xie et al., 2006; Xie & Ke, 2011) and only three of these are performed in the EFL setting (Firat et al., 2018; Hartnett et al., 2011, 2014). Due to the insufficient number of studies in the online EFL setting, the aim of this study is to offer some solutions to the ongoing problems of online language learning by considering the results of the following research questions:

1. Which motivational orientation dominates in the online English course?
2. What is the central perception of EFL students regarding their teacher motivating style and psychological need satisfaction?
3. How are students' perceptions of their teacher motivating style and psychological need satisfaction in the online English courses related to self-determined motivation?
4. Does student psychological need satisfaction mediate the relationship between perceived teacher autonomy-support and motivational orientations in online English learning?

Literature Review

Self-determination Theory

Self-Determination Theory (SDT), developed by Deci and Ryan (1985), is a fundamental theory in motivation research that emphasizes human psychological growth and the role of social environments in supporting or hindering it. SDT posits that all individuals possess three inherent psychological needs: autonomy (the need to act in harmony with one's true self), competence (the need to feel effective and capable), and relatedness (the need to feel connected with others). When these needs are fulfilled, individuals are more likely to experience optimal motivation and well-being (Ryan & Deci, 2019).

In educational settings, SDT distinguishes between two broad types of motivation: autonomous and controlled. Autonomous motivation includes intrinsic motivation, identified regulation, and integrated regulation, all of which are driven by internal interest or personally endorsed goals. In contrast, controlled motivation comprises external and introjected regulations, where behavior is motivated by external demands or internal pressures (Deci & Ryan, 2000). Amotivation, a third category, represents the absence of intent to act.

The motivational continuum proposed by SDT shows that the degree of self-determination varies across these types of motivation, with intrinsic and integrated forms being the most self-directed and amotivation the least (McEown & Oga-Baldwin, 2019). Research indicates that students who operate under more autonomous forms of motivation tend to demonstrate better engagement, persistence, and academic outcomes.

Another critical component of SDT in education is the teacher's motivational style. Autonomy-supportive teachers encourage student choice, acknowledge feelings, and minimize pressure, thereby fostering greater need satisfaction and motivation. In contrast, controlling teachers rely on pressuring strategies and external rewards, often resulting in negative psychological and educational consequences (Reeve & Jang, 2006;

Soenens et al., 2012). SDT emphasizes that teacher autonomy support not only enhances motivational quality but also improves students' academic performance and well-being (Ryan & Deci, 2020).

The SDT framework was further expanded by Noels (2001), who applied it to second language acquisition by integrating the Self-System Motivational Model of Development (SSMMD). Her heuristic model suggests that interpersonal factors—such as perceived autonomy support—affect the internal self-system by influencing psychological need satisfaction, which in turn shapes motivation and engagement in language learning (Noels et al., 2016).

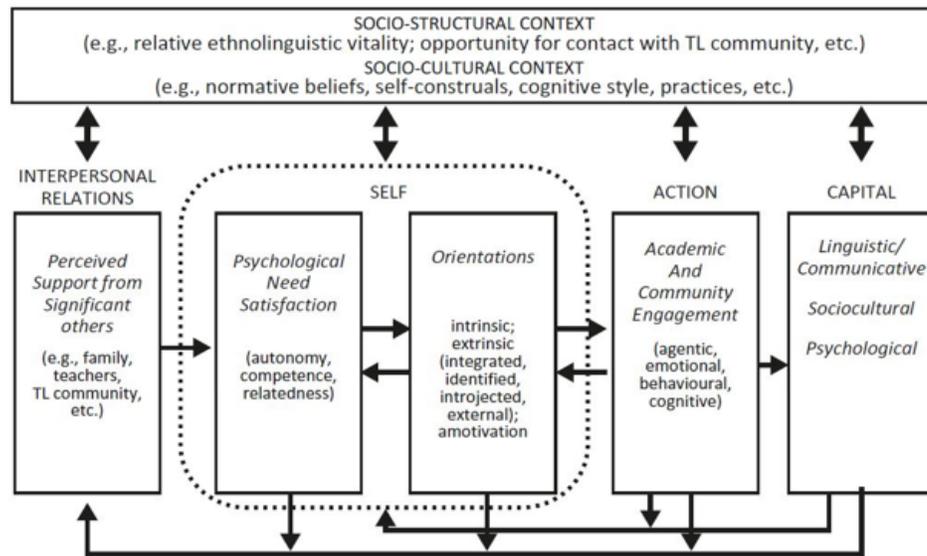


Figure 1: Heuristic model of language learning motivational process (Noels et al., 2019, p. 100)

Figure 1. shows that this model consists of four categories: interpersonal relationships, self, action, and psychological outcomes. The model states that interpersonal relationships influence the self by satisfying students' psychological needs and predicting their motivational orientations toward language learning. After that, the self affects students' actions and capital (Noels, 2001; Noels et al., 2016). In this study, the first two categories were tested to determine whether the satisfaction of psychological needs plays a mediating role between the promotion of teacher autonomy-support and motivational orientation.

Online learning and motivation

The technological advancements of recent decades, coupled with the Covid-19 pandemic, have made online learning a central component of modern education. Defined as learning that occurs through digital platforms in synchronous or asynchronous formats, online learning offers flexibility and accessibility but also presents significant challenges (Singh & Thurman, 2019).

Among the most critical concerns in online education are student engagement, motivation, and retention. Research has consistently shown that motivation is a key determinant of student persistence and academic success in virtual learning environments (Artino, 2008; Bekele, 2010; Schunk et al., 2008). Due to its self-directed structure, online learning demands a higher level of self-regulation and internal motivation from students compared to traditional classrooms (Cerasoli et al., 2014; Martens et al., 2004).

However, when learners lack sufficient quality of motivation—particularly autonomous motivation—their engagement suffers, leading to higher dropout rates and reduced performance (Chen & Jang, 2010; Muilenburg & Berge, 2005). This issue is especially pronounced in online EFL contexts, where language learning already presents cognitive and emotional challenges.

Despite extensive SDT research in face-to-face settings, studies that explore the dynamics of motivation, autonomy support, and psychological need satisfaction in online language learning remain limited. Only a handful of studies have examined these variables in online environments (e.g., Chen & Jang, 2010; Chiu, 2022; Filak & Nicolini, 2018), and even fewer have focused specifically on EFL learners (e.g., Firat et al., 2018; Hartnett et al., 2011, 2014). This gap underscores the importance of investigating how SDT constructs operate in digital language classrooms to inform better instructional practices and learner support systems.

Method

Participants

This theory-driven study applied a quantitative research design to find answers to the research questions. The study was conducted at a secondary school in Ankara, Turkey. Participants were selected from sixth and seventh grades, and 132 students who had attended online English courses for at least one semester participated in this study. Sixty-one of the participants were female, and 71 were male. All participants took part in a three-hour English course for one week and followed the regular curriculum of the Ministry of National Education (MoNE). The participants used the Educational Content Network (EBA) and the *Zoom* video conferencing service to participate in the courses. A web-based scale was designed to ask for students' voluntary participation. Before participating in the study, the students were informed about the purpose of the study in a *Zoom* meeting. Since the participants were under 18, their parents were asked to sign consent forms via email to approve their children's participation in this research study.

Data collection tools

Three questionnaires were used to collect data for this study: Language Learning Orientations Scale (Şad & Gürbüzürk, 2009), Learning Climate Questionnaire (Dinçer, 2014), and the Activity-Feeling States Scale (Dinçer, 2014). Since the scales were used in other studies, the reliability and validity measures were taken before our study, so no pre-testing procedure was followed.

The Language Learning Orientations Scale

The Language Learning Orientations scale was used to measure the motivation of EFL students in online English courses. The original scale was developed by Noels et al. (2000), and McIntosh and Noels (2004) developed it by adding additional elements based on the SDT perspective. In this study, the Turkish version of the scale adapted and translated by Şad and Gürbüzürk (2009) was used to avoid misunderstandings since the participants were secondary school students with a language level of A2. Factor analysis of this version yielded an internal consistency coefficient of $\alpha = .823$, with the scale explaining 67.30 % of the total variance. It had 24 items and subscales for motivation (Items 22, 23, 24), extrinsic motivation, which had three variables as external (Items 18, 19, 20, 21), and intrinsic motivation, which also has three variables as knowledge (Items 1, 2, 3, 4), accomplishment (Items 5, 6, 7, 8), and stimulation (Items 9, 10, 11). Each item was rated on a five-point Likert scale ranging from "strongly disagree" to "strongly agree".

The Learning Climate Questionnaire

The Learning Climate Questionnaire was used to examine EFL students' perceptions of their teacher's motivating style in online English courses. The original scale was adapted by Williams & Deci (1996) from the Health-Care Climate Questionnaire (Williams et al., 1996). Dinçer (2014) adapted and translated the scale into Turkish, and the factor analysis showed that the scale explained 61.7% of the total variance with a Cronbach's alpha of $\alpha = .95$. The scale has 14 items, and each item is rated on a five-point Likert scale. It shows how students perceive their teachers as autonomy-supportive or controlled. Higher scores indicate that the teacher has an autonomy-supportive motivational style, while lower scores indicate a controlling style.

The Activity-Feeling States Scale

The Activity-Feeling States Scale was used to examine perceived psychological need satisfaction and its association with motivation. The original scale was developed by Reeve and Sickenius (1994), but the Turkish version was used in this study (Dinçer, 2014). Factor analysis showed that the scale explained 77.4% of the total variance with a Cronbach's alpha = .91. The Turkish version contained nine items on basic psychological needs (autonomy, relatedness, and autonomy), and each was rated on a five-point Likert scale. This scale indicated whether students felt that their psychological needs were met or not. Higher scores meant their psychological needs were met.

Data collection process

Convenience and criteria sampling methods were used to select participants. The study was conducted at a public secondary school where the researcher worked. The participants who attended at least one semester of online classes were selected. The paper-based scales were converted to a web-based scale via *Google Docs*.

Before conducting the study, the Ethics Committee of Ondokuz Mayıs University approved the conduct and content of the study. Later, the Ministry of Education granted administrative approval for this study in public schools (75ad-d0d7-344b-bf25-b660). After obtaining approval, data were collected by a Zoom meeting with the participants at the end of the first semester. At this conference, the researcher explained the importance of the study by providing details and assured participation was voluntary. After this explanation, the link to the consent form and the scale were shared. First, the participants filled out the informed consent section and then the scale under the guidance of the researcher. Students' questions about items on the scale were answered.

Data analysis

Descriptive statistics, the independent sample t-test and structural equation modeling were carried out to answer the research questions. The IBM Statistical Package for Social Sciences Statistics (SPSS) and AMOS software were used to analyze the quantitative data. Descriptive statistics were used to examine students' motivational orientations, perceived psychological need satisfaction, and perceived teacher autonomy-support. An independent sample t-test was conducted to examine the difference in student perceptions of teachers' motivating style and psychological need satisfaction in terms of their self-determined motivation. Finally, structural equation models were used to investigate whether the satisfaction of psychological needs played a mediating role between students' motivational orientations and perceived teacher autonomy support.

The chi-square test was computed in structural equation modeling for hypothesis-testing. The following values were used in the interpretation of model fitting during structural equation modeling (Çokluk et al., 2010).

- Chi-squared test (χ^2/df): ≤ 3 = perfect fit; ≤ 5 = acceptable fit
- RMSEA: $\leq .05$ = perfect fit; $\leq .06-.08$ = good fit; $\leq .10$ = acceptable fit
- SRMR: $\leq .05$ = perfect fit; $\leq .08$ = good fit; $\leq .10$ = acceptable fit
- CFI: $\geq .90$ = acceptable fit; $\geq .95$ = perfect fit
- GFI: $\geq .90$ = acceptable fit; $\geq .95$ = perfect fit (pp. 271-272)

Cronbach's alpha analysis was used to find the reliability of all scales. The results showed acceptable reliability. These scores for the subscales of LLOS were determined as follows: for total intrinsic motivation $\alpha=.84$; for extrinsic motivation—identified regulation $\alpha=.64$, introjected regulation $\alpha=.63$, external regulation $\alpha=.63$; amotivation $\alpha=.82$ and total $\alpha=.87$. It gave $\alpha=.87$ for LCQ. A Cronbach's alpha score found to be $\alpha=.89$ was determined for AFS. The analysis showed that each of them has relatively high internal consistency.

Findings and Discussion

The internal consistency of the web-based questionnaire was measured with Cronbach's alpha $=.92$ and represented a high level of reliability. The results are discussed below, organized by research question.

Research question 1

A descriptive analysis was used to answer the first research question on the motivational orientation of students in the online English courses.

Items	Min.	Max.	M	SD
1. Intrinsic Motivation	1	5	3.93	.690
2. Identified Regulation	1	5	4.19	.802
3. Introjected Regulation	1	5	3.20	1.039
4. External Regulation	1	5	4.09	.681
5. Amotivation	1	5	1.57	9.30

Table 1: Descriptive statistics for language learning orientations

As can be seen in Table 1, identified regulation has the highest mean at 4.19, while amotivation has the lowest mean at 1.57. The lowest score for amotivation showed that students had either intrinsic or extrinsic motivation when learning English online, while the highest mean of identified regulation highlighted that the students had mostly autonomous motivation as it falls into the category of self-determined (Deci & Ryan, 2000). This result suggests that students could internalize the objectives of the online English course and

found its activities relevant to their learning process, although their behavior was still instrumental. Chen and Jang (2010) found a similar result that identified regulation as the most frequently chosen motivational orientation and amotivation as the least valued in online learning. Although the participants in this study were adult learners, the secondary school students showed a similar trend in online learning.

External regulation follows identified regulation as the second-highest motivational orientation, although its mean is quite close to the mean of identified regulation (external $M=4.09$; identified $M=4.19$). This finding showed that external reasons also strongly influenced the students' motivation. This means that online students not only paid attention to instrumental outcomes such as higher scores on their English exams, but also viewed learning English online as beneficial to their educational development.

Intrinsic motivation scored the third-highest motivational orientation ($M=3.93$). As can be seen in Table 2, the items of each sub-dimension were analyzed, and the item with the lowest score ($M=3.00$) was found in intrinsic motivation. Without this item, the mean intrinsic motivation rises to 4.02 which is very close to the external and identified regulation (external $M=4.09$; identified $M=4.19$). This means that students experienced joy and inner satisfaction while learning English online.

Items	Min.	Max.	M	SD
1. For the pleasure that I experience in knowing more about English language communities and their lifestyle.	1	5	4.34	.932
2. For the satisfying feeling I get in finding out new things about English language spoken countries.	1	5	4.08	1.056
3. To understand more things about English.	1	5	4.38	.852
4. For the sense of satisfaction that I feel learning new things.	1	5	4.17	.936
5. Because I enjoy the difficulty of learning English.	1	5	3.33	1.368
6. For enjoyment I experience when I grasp a difficult construct in English.	1	5	3.99	1.073
7. For the sense of accomplishing I feel when I am in the process of learning English.	1	5	4.06	1.117
8. For the academic pleasure I feel when I come through the difficult exercises in English.	1	5	3.94	1.043
9. Because I see English as a good language.	1	5	4.26	.939
10. For pleasure I get from hearing English spoken by native English language speakers.	1	5	3.69	1.299
11. Hearing English spoken appeals to me.	1	5	3.00	1.482
12. Because I choose to be the kind of person who can speak English.	1	5	4.15	1.039
13. Because I choose to be the kind of person who can speak more than one language.	1	5	4.20	1.103
14. Because I think it is good for my personal development.	1	5	4.24	.989
15. Because I would feel ashamed if I couldn't speak to my friends who know English.	1	5	3.17	1.448
16. To show myself that I am a good citizen because I can speak English.	1	5	3.34	1.272
17. Because I would feel guilty if I didn't know English.	1	5	3.15	1.373
18. Learning English offers new opportunities to me.	1	5	4.52	.735
19. In order to get a more prestigious job later on.	1	5	3.59	1.216
20. Because of the benefits that learning an international valid language provides.	1	5	4.21	.941
21. In order to have a better salary later on.	1	5	4.02	1.022
22. Honestly, I don't know, I truly have the impression of wasting my time in studying English.	1	5	1.71	1.231
23. I cannot come to see why I study English, and frankly, I don't give a damn.	1	5	1.58	1.084
24. I don't know; I can't come to understand what I am doing studying English.	1	5	1.50	.976

Table 2: Descriptive statistics for language learning orientation items

Table 2 shows the motivational tendency of online students in relation to the items of each sub-dimension. It turns out that the mean value for items on the knowledge subscale is 4.24 for the knowledge subscale, 3.83 for the achievement subscale, and 3.65 for the aesthetic subscale of intrinsic motivation. Thus, the

students scored highest on the knowledge subscale and lowest on the aesthetic subscale. This result suggested that students were interested in learning English for personal reasons, although learning English is the least leading reason for intrinsic motivation because of its aesthetic characteristics.

In summary, students mainly identified regulation, external regulation, and intrinsic motivation while learning English online. This result supports the multi-dimensional nature of motivation. This means that students can have multiple motivational orientations at the same time as they have multiple reasons for learning English. In addition, this result relied on the idea of Hartnett et al. (2011), who criticized the initial online learning studies that focused only on students' intrinsic motivation. Their study found that both intrinsic and extrinsic motivation (external and identified regulation) were dominant in online language learning. The findings of both studies showed similar results.

Research question 2

Descriptive statistics were carried out, and the results are given in the Tables below. Table 3 shows the perceived teacher autonomy in the online English courses. The overall mean is 4.42 (SD=.56), the highest mean is 4.55 (SD=.74) for learning English online.

Items	Min.	Max.	M	SD
1. I feel that my instructor provides me choices and options.	1	5	4.34	.827
2. I feel understood by my instructor.	1	5	4.38	.887
3. My instructor conveyed confidence in my ability to do well in the course.	1	5	4.55	.744
4. My instructor encouraged me to ask questions.	1	5	4.42	.857
5. My instructor listens to how I would like to do things.	1	5	4.40	.809
6. My instructor tries to understand to I see things before suggesting a new way to do things.	1	5	4.21	.893
7. I am able to be open with my instructor during class.	1	5	4.29	.970
8. I feel that my instructor accepts me.	1	5	4.56	.690
9. My instructor made sure I really understood the goals of the course and what I need to do.	1	5	4.34	8.18
10. I feel a lot of trust in my instructor.	1	5	4.72	.606
11. My instructor answers my questions fully and carefully.	1	5	4.48	.920
12. My instructor handles people's emotions very well.	1	5	4.43	.821
13. I feel that my instructor cares about me as a person.	1	5	4.46	.903
14. I feel able to share my feelings with my instructor.	1	5	4.32	.936

Table 3: Descriptive statistics for teacher motivating style

According to the Table, the students agreed with all items, as they had a mean value above 4.20 on all items. The highest-scoring items showed that students trusted their teacher when learning English online. Also, students felt that their teacher accepted them and encouraged them to realize their abilities in the online English courses. This result showed that online students found their teacher to be highly autonomously supportive. In addition, it was found that building a trusting relationship, feeling accepted, and supporting students in their abilities were the most influential behaviors of teachers in online English courses. This means that online students wanted to be cared for, understood, listened to, and accepted by their teachers. Therefore, both emotional and educational support from teachers are important issues in online English courses.

Table 4 shows the perceived psychological need satisfaction in the online English courses. The overall mean is 4.07 (SD=.72), the highest mean 4.60 (SD=.67) for online learning. The most common number for all items (except item 7) is 4. The subscale scores (autonomy, competence, and relatedness) were: 4.25 (SD =.88); 4.47 (SD =.68); 4.09 (SD =.86).

Items	Min.	Max.	M	SD
1-Being in this online English class makes me feel capable.	1	5	4.45	.868
2-Being in this online English class makes me feel I belong and the people here care about me.	1	5	4.32	.976
3-Being in this online English class makes me feel free.	1	5	4.22	1.095
4-Being in this online English class makes me feel involved with close friends.	1	5	4.19	1.020
5-Being in this online English class makes me feel competent.	1	5	4.34	.916
6-Being in this online English class makes me feel I am doing what I want to be doing.	1	5	4.20	1.053
7-Being in this online English class makes me feel emotionally close to the people around me.	1	5	3.78	1.072
8-Being in this online English class makes me feel my skills are improving.	1	5	4.60	.674
9-Being in this online English class makes me feel free to decide for myself what to do.	1	5	4.32	.968

Table 4: Descriptive statistics for teacher motivating style

As can be seen in Table 4, the students strongly agreed with the scale items, having a mean value above 3.70 for all items. Therefore, the students thought that their psychological needs were being met. Competence was found to be the most satisfying need in online English courses ($M=4.47$), while students scored lowest on relatedness ($M=4.09$). This result suggests that students might have felt capable and competent in online English courses despite feeling emotionally distant from their teacher and friends. The reason for this situation may be that the distant nature of online learning caused insufficient teacher-student interaction and could be a problem for the satisfaction of relatedness. However, the self-directed nature of online learning does not hinder the satisfaction of competence. This finding regarding relatedness showed some similarity to the studies by Durksen (2015) and Filak and Nicolini (2018). Both studies found that relatedness was the least satisfied need in online learning, while autonomy and competence were more satisfied. Filak & Nicolini (2018) explained this situation as lacking connection and belonging. Additionally, Chiu (2022) found that because the autonomous nature of online learning leads to less physical interaction between teachers and students, students receive less support from their teachers for relatedness. In addition, Hartnett et al. (2014) found that relatedness is associated more with teachers than with peers. Therefore, more importance should be given to strategies to satisfy relatedness in online learning.

In summary, the results showed that EFL students in online English courses perceived that their teacher as highly autonomy supportive and showed a high level of psychological need satisfaction.

Research question 3

The Relative Autonomy Index (RAI) was used to determine students' level of self-determination through the combination of motivational orientations. A calculation based on the formula ($\text{External} * -2 + \text{Introjected} * -1 + \text{Identified} * 1 + \text{Intrinsic} * 2$) was used to form the RAI scores (<http://www.psych.rochester.edu/SDT>). To assess the validity of the RAI calculation, its correlation with teacher autonomy-support, psychological need satisfaction, autonomous motivation (intrinsic and identified), and controlled motivation (external and introjected) was analyzed. As can be seen in the Table, the students' RAI score is significantly positively correlated with these variables ($p < .01$). This strong correlation underscores the validity of the students' RAI score and its use to classify student motivation as autonomous versus controlled motivation.

Students' Rai Scores	
1-Autonomy-support	.45**
2-Psychological needs	.46**
3-Autonomous motivation	.90**
4-Controlled motivation	.27**

Note. * $p < .05$, ** $p < .01$

Table 5: Correlations among RAI, autonomy support, psychological needs, and motivational orientations

After checking the validity of the RAI score, the test analysis of independent samples was performed to examine the difference between perceived teacher autonomy-support and psychological need satisfaction in relation to the degree of their self-determination. The results are given below.

Variables	Self-determined Degree		t	df	p
	Autonomous (n=90)	Controlled (n=42)			
Autonomy-support	4.50 (SD=.49)	4.26 (SD=.67)	2.270	130	.02*
Psychological need satisfaction	4.34 (SD=.62)	4.11 (SD=.87)	1.727	130	.08

Note. * $p < .05$

Table 6: Differences of students' self-determined degree in autonomy-support and psychological need satisfaction

Table 6 shows that the perceived teacher autonomy-support significantly changes according to the students' self-determined level ($p < .05$) depending on the self-determination level of the students. This means that students with autonomous motivation found their teacher to be more autonomy supportive than students with controlled motivation. This result is parallel to the previous SDT-based studies in both face-to-face and online learning. In face-to-face learning, research studies have shown that students have more self-determined motivation and less anxiety when they have a teacher who supports autonomy (Assor et al., 2002; Deci & Ryan, 1991; Dincer, 2014; Noels et al., 1999; Noels et al., 2000; Reeve, 2006, 2009; Reeve & Tseng, 2011; Yesilyurt, 2008). In online learning, Xie et al. (2006) found that the positive attitude of the instructors improved the students' motivation. Similarly, Russell (2013) pointed out that teacher autonomy-support and constructive-based learning environments positively influenced online students' self-determined motivation. Thus, this study, in line with the previous online learning studies, supports the idea that the more online EFL students perceive teachers as promoting autonomy, the more self-determined motivation they have.

Despite the significant change in perceived teacher autonomy-support, students' psychological need satisfaction does not change in line with their self-determined level as their p -value was .08 ($p < .05$). However, Ryan & Deci (2017, 2019) suggested that students who experience psychological need satisfaction have more autonomous motivation for face-to-face learning. When learning online, Filak and Nicolini (2018) found that students with higher levels of quality motivation had higher levels of competence, autonomy, and relatedness. In addition, Firat et al. (2018) found that the satisfaction of autonomy was the most effective factor for intrinsic motivation. To understand the reason for this result, the sub-dimensions were analyzed using the independent samples t -test to examine whether there was a significant change.

Variables	Self-determined Degree		t	df	p
	Autonomous (n=90)	Controlled (n=42)			
Autonomy	4.33 (SD=.49)	4.07 (SD=.67)	1.60	130	.16
Competence	4.55 (SD=.62)	4.27 (SD=.87)	1.94	130	.05*
Relatedness	4.14 (SD=0.81)	4.00 (SD=0.94)	.89	130	.37

Note. * $p < .05$

Table 7: Differences in students' autonomy, competence, and relatedness satisfaction

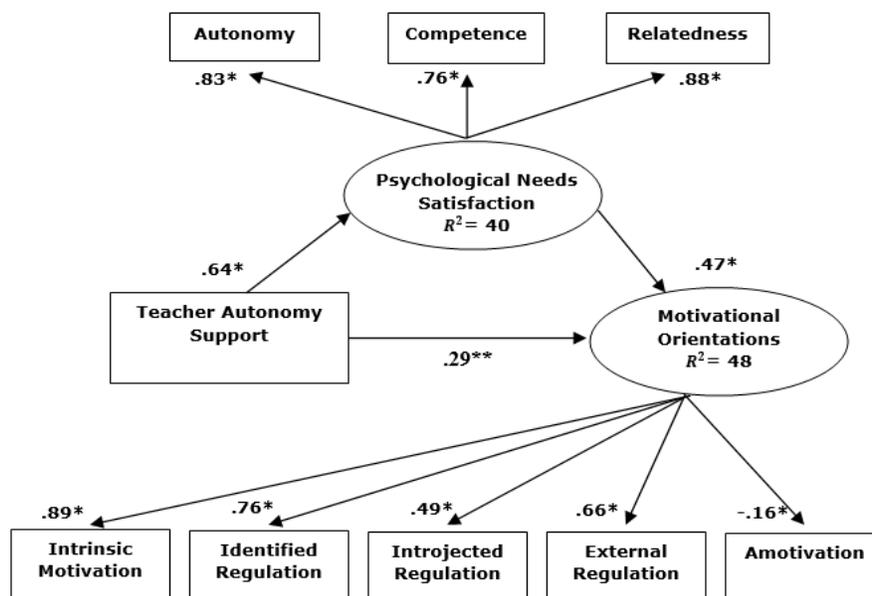
As can be seen in Table 7, the perceived competence changed significantly depending on the self-determined level of the students. In other words, students with self-determined motivation perceived their competence as more satisfied than those with controlled motivation. On the other hand, there was no significant change in the autonomy and relatedness of online EFL students. This result may be due to the fact that the online learning environment was a new environment for secondary schools, and they had only experienced this type of learning for one semester. Therefore, this short period of time was not sufficient for teachers to satisfy students' relatedness and autonomy, although students felt that all their needs were satisfied by their teacher. Relatedness and autonomy may require more time to process than competence as the distance of online learning makes them much more difficult to satisfy online. Competence can be fostered by encouraging students to recognize their abilities and providing feedback to encourage success, even though

teachers and students are physically separated. On the other hand, teachers should use special techniques and strategies to increase satisfaction of relatedness and autonomy in online learning.

Research question 4

It was examined whether the satisfaction of psychological needs plays a mediating role between teacher autonomy-support and the satisfaction of needs. A study by Noel et al. (2016) explained the motivational process of language learning by saying that context-related support increases the satisfaction of psychological needs and thus motivational orientation. Therefore, this model asserts that psychological need satisfaction plays an intermediary role between contextual support and motivational orientation. Structural equation modeling (SEM) was performed using the AMOS program.

The model analysis showed that the coefficients of all paths were significant. The model has an acceptable model fit according to the model fit standards given in the methodology section ($\chi^2/df/25$ =acceptable fit; RMSEA/.081 acceptable fit; SRMR/.06 acceptable fit; CFI/.94=perfect fit; GFI/.91=perfect fit). With respect to the structural pathways, perceived teacher autonomy-support significantly predicted students' psychological need satisfaction and explained the 40% in the variance of psychological needs according to the squared multiple correlations. Students' motivational orientations were predicted by perceived teacher autonomy support based on satisfaction of psychological needs and the 48% of variance was explained.



Model fit: $\chi^2 = 51.981^*$ ($df = 25$); $\chi^2/df = 2.079$; RMSEA = .081 (.055- .126); SRMR = .06; CFI = .94; GFI = .91
Note: For Figures 4.1. * Coefficient is significant at the .001 level (2-tailed); ** Coefficient is significant at the .01 level (2-tailed). Standardized coefficients provided. Total effects of teacher motivating style on students' motivation = $.60^{**}$. Total indirect effects = $.30^*$

Figure 2: Mediation model for the relationship between teacher motivational style, psychological needs satisfaction and online learning motivation

As can be seen in Figure 2, the direct effect of the teacher autonomy-support on students' motivational orientations is significant ($\beta = .60$ (.000), $p < .05$). In addition, teacher autonomy support has a significant indirect effect on students' motivational orientations through the satisfaction of psychological needs ($\beta = .30$ (.009), $p < .05$). This finding suggests that the satisfaction of psychological needs plays a partially mediating role between the teachers' motivating style and the motivational orientation of the students. Therefore, the teachers' motivating style affects students' motivational orientation both directly and indirectly and predicts both students' psychological needs and motivation. When teachers encourage autonomy in online language learning, students feel psychologically happier and more motivated.

This result supports previous studies on online learning. Chen and Jang (2010) found that contextual support positively affected need satisfaction, which in turn, affected online students' motivation. Similarly, Hsu et al. (2019) found that self-determined motivation was predicted by contextual support from psychological need satisfaction. This result is also parallel to the studies in face-to-face classes. Carreira et al., (2013) found that the perceived teacher autonomy-support of EFL students positively influenced their motivational orientation by satisfying their psychological needs. In short, the results of this study paralleled the results of studies on both face-to-face and online learning.

Conclusion and Suggestions

High dropout rates and student disengagement have become major concerns for educators in online learning. When reviewing the literature on online learning, it was found that quality motivation plays an essential role in student engagement and attendance. Therefore, this quantitative study aimed to examine the motivation of online EFL students in terms of Self-Determination theory. To this purpose, motivational orientations perceived by online EFL students, teacher autonomy-support, and psychological need satisfaction were examined and analyzed using descriptive statistics. In addition, the relationship between students' motivational orientations, perceived teacher autonomy-support, and psychological need satisfaction were analyzed using the independent sample t-test.

Furthermore, the SDT-based motivational framework was tested in an online English language learning environment using structural equation modeling. The results of this study showed that the identified regulation was the central motivational orientation in online English courses. Online students believed that their teacher was autonomy-supportive, and their psychological needs were satisfied. It was also found that online EFL students with autonomous motivation perceived their teacher as more autonomy-supportive than those with controlled motivation, while their perception of their psychological need satisfaction did not change in line with their self-determination. Finally, the findings showed that psychological need satisfaction was a mediator between teacher autonomy-support and student motivation in learning English online.

Reeve (2006) suggested six classroom behaviors to teachers who want to increase student motivation while teaching English. Although these behaviors were created for face-to-face learning, they can be adapted for online learning as well. These behaviors are "taking the students' perspective", "vitalizing inner motivational resources", "providing explanatory rationales", "acknowledging and accepting negative effect", "using informal, non-pressuring language", and "displaying sentence" (Reeve, 2006).

Some suggestions for further studies can be given. Quantitative data were collected at a specific point in time. However, using a longitudinal approach could provide more credible reasons as to why relatedness and autonomy have not changed in line with students' self-determined level. In addition, the study was conducted at a secondary school; therefore, the results of the study may not be generalized to other EFL learners in primary schools, secondary schools, and universities in Turkey and in other countries. To improve the level of generalizability, similar studies can extend this research by including participants from different regions, grades, or even cultures.

Acknowledgements

This study is a part of the first author's (Hale Nur Söyler Bölükbaşı) master's thesis "The Multidimensional Investigation of Online EFL Students' Motivation in Terms of Self-Determination Theory" under the supervision of the second author (Deren Başak Akman Yeşilel).

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