Gender Differences in the Motivational Profile of Undergraduate Students in Light of Self-Determination Theory: The Case of Online Learning Setting

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Abstract

Motivation has a vital role in successful learning and has garnered the interest of numerous scholars in a wide array of contexts, especially education. Despite such influence, literature in motivation has inconsistent findings with regard to gender. Also, shifting to online learning as a consequence of COVID-19 has impacted students' academic motivation. This study is novel as it is the first to classify motivation types according to self-determination theory among Jordanian undergraduates in online learning environment throughout the COVID-19 pandemic. In particular, it examined the motivational Jordanian undergraduate profile and investigated the same in relation to gender. This study employed a quantitative approach with a web-based questionnaire. The study sample comprised 433 undergraduates who were enrolled in online courses offered at the University of Jordan. The data were collected in September of the academic year 2021–2022 using the academic motivation scale. Mann–Whitney U test was performed to examine gender differences in motivation type. Results demonstrated significant gender difference in motivation types. Females had more self-determination (U = 19,106, p = .024), intrinsic motivation to experience stimulation (U = 17,030, p = .000), identified regulation (U = 14,997, p = .000), and introjected regulation (U = 17,557, p = .000), while males had more amotivation (U = 17,557, p = .000). Implications of this study can inform online instructors and decision-makers to carefully consider online learning settings and employ intrinsic motivation strategies to boost students' self-determination and enhance their motivation quality.

Keywords: *Motivation, Online Learning, Self-Determination Theory, Academic Motivation Scale, Gender Difference.*

Introduction and Theoretical Framework

Gender has been extensively discussed in psychological and educational research in terms of several constructs, and motivation is one of these important constructs that has a long history in the educational field. It affects learning success and is considered a prerequisite for all learning setting (Özen, 2017; Islam et al., 2018). Lack of motivation is one of the most noteworthy

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challenges of online learning, and it influences and correlates with academic achievement (Carter et al., 2020; Hartnett, 2016). Motivation among online learners is influenced by certain motivational factors that may relate to internal, external, and personal factors such as learning environment, variation in students' abilities, and the skills required for online learning (Kim & Frick, 2011). Furthermore, the influence of COVID-19 pandemic is increasingly visible on social and educational lives (Dube & Ndaba, 2021; Novikov, 2020; Omodan et.al., 2021; Subur, 2021; Tarman, 2020;), it has been shown to hinder learners' motivation by evoking negative emotions and mental health issues including depression, anxiety, fear, and stress (Al-Kumaim et al.,2021; Chiu & Lonka, 2021; Ajlouni & Almahaireh, 2020; Jaradat & Ajlouni, 2020; 2021; Zaccoletti et al., 2020). In regard to gender, Pasion et al. (2020) demonstrated that the COVID-19 pandemic had different impact on females and males in terms of student engagement. Gender role in academic motivation is still unclear, and the findings of different studies are equivocal (Cokley et al., 2001; Kissau, 2006).

Motivation and Self-Determination Theory in Online Learning Context

Motivation is conceptualized as an inner construct that leads, changes, or maintains goals, actions, and preferences, and it allows students to achieve their goals, engaging them in learning activities. It is the force that encourages them to cope with all difficulties and challenging circumstances (Amrai et al., 2011; Bzuneck, 2001; Beluce & Oliveira, 2015; Gopalan et al., 2020; Jones, 2009). A number of motivation theories have been introduced to understand motivation in education, for example, self-determination theory, which views motivation as a multi-dimensional construct and a continuum between fully self-determined and non-self-determined. Self-determined action is volitionally performed, where the regulatory process is a choice, and the perceived locus of causality (PLOC) is interior to the self, whereas controlled action is compelled by some interpersonal where the regulatory process is compliance and the PLOC is external to the self. Internalization process transforms the external regulations into internal ones (Black & Deci, 2000; Deci et al., 1991; Zimmerman et al., 1992). According to self-determination theory, extrinsic and intrinsic motivation are intentional and vary according to the underlying regulatory process. In autonomous motivation, the action is performed for fun and enjoyment where there are sense of volition and choice to perform this action, whereas in controlled motivation, there is a sense of pressure and instrumental demands (Gagné & Deci, 2005).

Amotivation (AMO) is a situation in which there is no intent to act. Intrinsic motivation includes: (1) intrinsic motivation to know (IMTK), in which an individual engages in learning, exploring, or understanding something new to have pleasure; (2) intrinsic motivation to accomplish (IMTA), in which the an individual engages in an activity to achieve a new standard, or accomplishment to have pleasure; and (3) intrinsic motivation to experience stimulation (IMTES), in which an individual engages in action to stimulate sensations, i.e., sensory pleasure, fun, excitement (Sisle & Smollan, 2012; Orsini et al., 2015; Vallerand et al., 1992).

Extrinsic motivation encompasses: (1) external regulation (ER), which is the lower form of self-determined motivation in which behaviors are performed for a reward or avoid punishment; it is the case of motivation to satisfy an external demand or a socially constructed contingency; (2) introjected regulation (INR), in which individuals internalize the reasons for the behaviors they perform to avoid guilt and shame or achieve ego enhancement and feelings of worth but are still regulated for external demand; (3) identified regulation (IDR), in which individuals are able to identify with the value underlying the regulation, and the behavior is performed to represent a behavioral goal that is personally important (Gagné & Deci, 2005).

According to self-determination theory, to support motivation, one should support the basic psychological needs, which are a) autonomy, in which individuals feel internally assent regarding their behavior and feel free of external constraints on behavior; b) competence, in which the individuals feel connected or skilled in their behavior; c) relatedness, in which the individuals meaningfully feel connected or involved with others (Beluce & Oliveira, 2015; Ryan & Deci, 2000; Sheldon & Filak, 2008). Supporting these needs allows an individual to become self-determined and fulfilled. Self-determination theory proposes that social context influences impact the basic needs that have been suggested to influence motivation (Alexandris et al., 2002). The more satisfied basic psychological need the more self-determined students and intrinsically motivated (Behzadnia & FatahModares, 2020). (Behzadnia & FatahModares, 2020). Students with more intrinsic motivation are more prominent in schools and have great academic achievements (Richard & Edward, 2000).

Students studying in online mode should be self-determined and have intrinsic motivation to succeed (Ayub, 2010). Design methodology in online learning environments can be instructor-controlled in which the instructor guides students, or student-controlled environment, wherein the students' study is self-paced, providing more autonomy to proceed (Moore et al., 2011). However,

the online designer and instructors should recognize and adopt appropriate instructional strategies to motivate students, engage them, boost interaction, and offer guidance and support (Anderson, 2008; Bonk & Reynolds, 1997).

Previous studies that examined academic motivation were varied in their objective, sample (i.e., nationality, age), type of motivation (number of subscales of Academic Motivation Scale [AMS] considered), results, and context. Nishimura et al. (2017) conducted a study among junior high school students and investigated general changes in student motivation. Their results indicated that autonomous motivation shifted to controlled motivation among students. Liu et al. (2017) conducted a study among chemistry students using chemistry-specific version of AMS according to seven types of motivation and found that students had a high level of three types of external regulation and intrinsic motivation to know, and they had moderate level of intrinsic motivation to accomplish and experience stimulation, and low amotivation. Further, Omari et al. (2021) conducted a study among university students in Morocco using AMS considering three types of motivation and found that the students had high extrinsic motivation, moderate intrinsic motivation, and low amotivation to learn English language. Also, Nguyen (2021) found that motivation-boosting strategies can help students overcome the challenges and barriers they face in online learning during the pandemic. Cadête et al. (2021) conducted a study among medical university students in Brazil by using AMS considering Seven types of motivation and demonstrated that they had a moderate level of intrinsic motivation to know and accomplish, external and identified regulation, as well as a moderate level of intrinsic motivation to experience stimulation and introjection, and a low amotivation.

So far, only a few studies have been conducted to investigate SDI among students and most of them extracted SDI to find their association or impact on other variables such as intervention program, for example, Manzano-Sánchez et al. (2019) found a mean score for SDI among students equal to 6.10. Similarly, Hegarty (2010) reported an SDI with a mean score of 7.30 among graduate students and demonstrated that intrinsic motivation changes over time. Furthermore, Hegarty et al. (2012) reported that the university students had a mean score for SDI equal to 5.9; also, Scifres et al. (2021) conducted a study among business and non-business students and found that their SDI mean scores were 6.24 and 5.86, respectively.

Gender differences in Online Learning Setting and Motivation

Male and female experience the online learning setting in different ways with regard to several variables, i.e., achievement, motivation, perceived learning, habits, and behavioral communication, self-regulation, self-efficacy, computer use, and student satisfaction (Chyung, 2007; Astleitner & Steinberg, 2005; Harvey et Al., 2017). A number of studies have been conducted to understand the gender gap in online learning setting to provide better learning environment and success. These studies prove that females were more connected to their classmates and perceived the online learning more than males (Rovai & Baker, 2005), whereas a few studies on online communication in regard to gender have consistent results (Shea et al., 2001, Clay-Wamer & Marsh, 2000).

Studies on student motivation have demonstrated gender differences in motivational construct (Meece et al., 2009). Researchers have explained gender differences in terms of socialization and other several factors, i.e., self-perceptions of ability, self-competence (Metallidou & Vlachou, 2007; Graham et al., 2008; Kissau, 2006). Also, the conducted studies confirmed the role of parental influence and school and home environments in shaping the gender differences in motivation (Meece et al., 2009; Eccles & Blumenfeld, 1985). The conducted studies on basic psychological needs had contrasting findings with regard to gender; while some studies demonstrated significant gender differences, others did not (Harvey & Retter, 2002; Antunes et al., 2020).

The findings of previous studies on motivation regarding gender differences are equivocal (Cokley et al., 2001). Furthermore, only a few studies have investigated this aspect and considered all motivation types based on self-determination theory. Abu-Awaad (2009) conducted a study among primary school students, that aimed to validate AMS considering just five subscales and found that it was valid and reliable as females had significantly higher levels of all types of motivation except for amotivation, as this is the only conducted study in the context of Jordan yet it is old and administrated at ANRWA school not Jordanian school. Orsini et al. (2015) conducted a study considering seven motivation types and revealed that females had significantly more of all types of motivation, and only the intrinsic motivation to experience stimulation had no significant differences with regard to gender. Their findings also showed that male students had higher statistically significant scores in the amotivation subscale.

Further, Caleon et al. (2015) conducted a study using AMS among Singapore secondary students consideringly seven types of motivation and found that students had higher levels of all types of motivation, except for amotivation, which had medium levels. Also, they found no gender differences in all types of motivation except for amotivation subscale in favor of male students. Saygili (2018) conducted a study among school students according to two motivation types, namely, intrinsic and extrinsic motivation, in regard to gender and found that there are no significant differences. Furthermore, Burgt et al. (2018) conducted a study based on four motivational profiles that combined autonomous motivation and controlled motivation, and the results demonstrated that females had more autonomous motivation than males regarding learning. Additionally, Asif et al. (2018) directed a study on college students and showed that they had moderate level of intrinsic and extrinsic motivation and low amotivation; furthermore, males had significantly lower intrinsic motivation and extrinsic motivation than females, and had significantly higher amotivation than females.

Ardeńska et al. (2019) conducted a study among Polish university students using the polish version of AMS and found that students had a moderate level of intrinsic motivation to accomplish and experience stimulation and introjected regulation, and they had a high level of intrinsic motivation to know, identified regulation and external regulation, and low amotivation. They also found significant differences in all types of extrinsic motivation and intrinsic motivation to know in favor for female, whereas in males more amotivation. Zhang and Lin (2020) conducted a study among online high-school students to examine their motivational profiles and found statistically significant gender differences according to the motivational profiles; female students had high-quality profiles and tended to be more autonomous and self-determined than males. Similarly, Kuśnierz et al. (2020) conducted a study to examine the validity of AMS considering seven subscales and found that students had a high level of all types of motivation except for intrinsic motivation to experience stimulation and amotivation, which were moderate and low, respectively, and female students had significantly higher levels of seven types of motivations except for amotivation. Furthermore, Naz et al. (2020) conducted a study on university students in Pakistan and demonstrated that male students had significantly higher levels of extrinsic motivation.

Study Problem

The findings of different studies on academic motivation in regard to gender are contradictory, but they all recommend conducting further studies. Additionally, there are only a few studies that aimed to assess and classify motivation in online learning settings on the basis of self-determination theory, as most of them have been classified it according to the two or three main broad domains of motivation types, and not all the seven types. Furthermore, no study has been conducted on online learning setting during COVID-19 pandemic in Jordanian context. These issues were the motivating factors to conduct this study.

The undergraduates at the University of Jordan (UOJ), Jordan, have been subjected to the COVID-19 consequences, as the pandemic has disrupted students' lives, habits, routines, and learning. Therefore, undergraduates' motivation types and levels could be negatively impacted by the pandemic. Furthermore, as motivation could decline over the years among university students and shift from intrinsic to extrinsic, it must be regularly assessed, and this underscores the need to conduct studies on undergraduates' motivation types and levels. The motivation among undergraduates at the UOJ could be affected by the university closures and the rapid shift from face-to-face to online learning methods while facing new instructional strategies, online learning platforms, the absence of social presence. For instance, their motivational profile could be changed, and these changes could differ with gender because of the socialization factors in Jordan similar to the gender differences in online learning self-efficacy and digital skills required for online learning. This study is novel as it is the first investigation conducted on Jordanian undergraduate students in the context of online learning setting. Therefore, this study will contribute new insights into undergraduate motivation types in relation to gender, thereby filling a research gap. The results can inform decision-makers and online instructors at the UOJ about undergraduates' academic motivation to enhance the quality of online learning and teaching processes.

Research Questions

This study was conducted with the objective to find the gender differences in the motivational profile of online undergraduates at the UOJ by answering the following formulated questions:

>QR1: What is the level of self-determination among online undergraduates at the UOJ throughout the COVID-19 pandemic?

QR2: What are the types of motivations among online undergraduates at the UOJ throughout the COVID-19 pandemic?

Hypothesis

Based on the theoretical framework and the formulated research questions, the following hypothesis was sought to be answered:

HY1: There exist statistically significant differences in the level of self-determination according to gender.

HY2: There exist statistically significant differences in motivation's types according to gender.

Method

Research Design

In this study, a quantitative research methodology was adopted, and a descriptive study design was implemented using a web-based questionnaire to investigate the motivational profiles according to gender among the undergraduates from the UOJ. The quantitative method permits researchers to conduct statistical analyses to conclude about a sample population, whereas the descriptive design provides a numeric description of population's motivation by investigating a sample of that population (Ahmad et al., 2019; Asenahabi, 2019). A web-based questionnaire was designed for the undergraduate participants, and it comprised demographic items and the AMS. Also, non-parametric analysis using Mann–Whitney U (MWU) test was conducted to examine gender differences in motivational profile. MWU test is the most appropriate test to observe differences between two groups on a single, ordinal variable with no normal distribution of data sample (MacFarland & Yates, 2016). Several psychological studies on motivation have used non-parametric test because of the non-normal distribution of this variable among the investigated groups (Rožman et al., 2017; Sivrikaya, 2019).

Participants

The total of approximately 35,000 undergraduates at the UOJ who had registered in the summer term of 2021 were requested to take part in this study. The study sample comprised 433 undergraduates (271female and 162 male) who had enrolled in the summer term. This was an

appropriate random sample since it is more than the required sample size (380) specified by Stephen Thompson's equation with confidence level of .95 and margin error of .05 (Thompson, 2012). The participants were taught using the synchronous online learning method during the summer term of academic year 2020- 2021 where the teaching and learning process took place online at a distance from the main campus through Moodle and Microsoft Teams. The UOJ provides the latest learning management systems (LMS). Students can access the LMS any time, with all learning materials, such as PowerPoint slides, instructional videos, URL for supported related topics along with some assignments and forums. Also, The UOJ has a well-designed infrastructure that provides online technical support, remote access to the e-library, and a virtual visit to campus using augmented reality and virtual reality.

In total, 433 undergraduates responded to the questionnaire (62.6% female and 37.4% male). Among all the undergraduates, 49.4% were from humanities, 35.3% from scientific, and 15.2% from medical programs. About 28% had an excellent GPA, 49% were very good, and 23.1% reported that their GPA was good or less. A total of 2.5% of the undergraduates stated that they were seniors, and 24.3%, 58.4%, and 14.8% were juniors, sophomores, and freshmen, respectively. The result was an appropriate sample comprising all the undergraduates who were exposed to online learning experiences and willing to join the study. Table 1 summarizes the characteristics of the participants.

Table 1
Characteristics of the Participants (N = 433)

No.	Variable	Value	F	P
1	Gender	Male	162	37.4%
		Female	271	62.6%
2	School categories	Humanities	214	49.4%
		Scientific	153	35.3%
		Medical	66	15.2%
3	GPA	Good or less	100	23.1%
		Very good	212	49%
		Excellent	121	28%
4	Academic Level	Freshman	64	14.8%
		Sophomore	253	58.4%
		Junior	105	24.3%
		Senior	11	2.5%

F: Frequency, P: Percentage.

Data Collection Tool

Online learner academic motivation was assessed using the AMS, which was proposed by Vallerand et al. (1992) and available at https://www.lrcs.uqam.ca. The scale comprised 28 items and encompassed seven subscales: IMTK, IMTES, IMTA, IDR, ITR, EXR, AMO. Each subscale contained four items, and each item asked the participants to answer questions such as "Why do you go to study at a university?" The subjects answered using a 7-point Likert that ranges from 1 = doesn't correspond at all to 7 = corresponds exactly. The self-determination indices (SDI) were calculated using the following formula presented by Guay et al. (2003):

((2*intrinsic motivation) + (1*identified regulation)) − ((1*external regulation) + (2* amotivation)).

The computed SDI scores ranged between −18 and +18. These indices represent individual's relative levels of self-determination. The higher the score, the higher the intrinsic motivation and more self-determined an individual (Hegarty, 2010; Guay et al., 2003).

Several studies ensured the validity and reliability of AMS (Utvær & Haugan, 2016; Fairchild et al., 2005; Natalya & Purwanto, 2018; Liu et al., 2017). They confirmed that AMS has satisfactory internal consistency and high reliability and construct validity (Orsini et al., 2015).

The validity and reliability of AMS were ensured by conducting a pilot study among 50 undergraduates. The correlation coefficients between the subscale scores ranged from 0.35 to 0.81, and the correlation between the subscale and the total score ranged from 0.72 to 0.89. The item–total correlation between each item of the AMS and the respective subscale ranged from 0.71 to 0.90, and the correlation between each item of the AMS and the total score ranged from 0.44 to 0.80. This confirmed the internal consistency of the scale. Also, the total AMS Cronbach's alpha score was 0.95. It also showed that Cronbach's alpha for AMS subscales ranged between 0.78 and 0.88. These values confirmed that the AMS was a reliable scale in this study.

Data Collection

Data were gathered on September 2021 at the end of summer term throughout the COVID-19 pandemic using web-based questionnaire with 32 items 4 items for demographic data and 28 items for the academic motivational measure. The consent was obtained from the participants of the study and the institutional board at the UOJ before starting the study. The researchers posted the URL of the questionnaire on LMS and different social media groups (i.e., Facebook and

WhatsApp) for UOJ undergraduates. Participants were asked to respond to the questionnaire anonymously. It took approximately half an hour to respond to the questionnaire. Four hundred and thirty-three undergraduates from UOJ responded.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) program version 26.0 was employed to conduct the statistical analysis. The descriptive statistics, i.e., means and standard deviations for SDI and each subscale of AMS to respond to the first and second formulated questions were extracted. Non-parametric test and MWU test were employed to assess the formulated hypotheses to test the existence of significant gender differences in UOJ undergraduates' motivational profile (i.e., SDI, IMTK, IMTA, IMTES, IDT, ITR, ETR, AMO). Before conducting MWU analysis, their initial assumptions were ensured.

Findings and Discussion

Initial Assumption

The normality test was done using Shapiro–Wilk test, and the findings showed that the data were not normally distributed ($p < .005$) for any motivation types according to gender. This indicated that the non-parametric MWU is the most appropriate statistical test to validate the study hypothesis (McKnight & Najab, 2010). Next, the assumption test for MWU was ensured and checked by the researchers prior to performing the statistical MWU test, as shown in the following steps.

MWU Assumptions

The first MWU assumption is that the study sample is randomly drawn from the study population (Refugio & Delmo, 2018; Nachar, 2008), which is assumed by the random study sample. The second assumption is that the dependent variable is ordinal, which implies that it should be measured at the ordinal level (Nachar, 2008; Refugio & Delmo, 2018). This was assumed in this study, as the dependent variable of the study is motivation types, assessed using the AMS 7-point Likert scale and rated from 1 to 7. The third assumption for MWU is that the independent variable is dichotomous, which implies that it has two categories (Refugio & Delmo, 2018), which is also

assumed in this study, as the independent variable of the study is gender, which comprises two categories, i.e., male and female.

The last assumption is the sample independency, which indicates that the two groups contain different subjects, i.e., the observation is just in one group and cannot be in both, which implies the two groups are not related (Nachar, 2008; Refugio & Delmo, 2018). This was also assumed, as the observations corresponded to different participants, and were drawn from either female group or male group and did not belong to both. In other words, the observations of the study were independently drawn. The findings of the assumptions satisfied the required conditions to perform MWU test.

QR1: The level of self-determination among online undergraduates at the UOJ throughout the COVID-19 pandemic

Descriptive statistics for SDI score were extracted to answer the first research question. The mean, standard deviation, and the maximum and minimum values were calculated to investigate the level of self-determination among the online undergraduates at the UOJ throughout the COVID-19 pandemic. The findings related to the undergraduate's SDI were measured using SDI formula (Guay et al., 2003). As stated earlier, the SDI scores ranged between −18 and 18. The descriptive statistics for undergraduate SDI according to gender are summarized in Table 2.

Table 2
Descriptive Statistics for Undergraduate SDI Scores According to Gender.

Variable	Value ($N = 433$)
M	8.27
SD	2.3
Max	12.83
Min	−3.38

Table 2 shows that the SDI for undergraduates ranged between −3.38 and 12.83, with a mean value of 8.27. It demonstrates that the total SDI for undergraduate students at the UOJ were M = 8.27, which indicates that undergraduates were not fully self-determined.

QR2: Types of motivation among online undergraduates at the UOJ throughout the COVID-19 pandemic

The researcher examined the types and level of the undergraduate motivation, which reflected the SDI of undergraduates, by extracting descriptive statistics for each AMS subscale, i.e., means and standard deviations (SD). The findings related to the undergraduates' motivation level of each type were measured on a 7-point Likert. The mean values ranged between 1.0 and 3.00, indicating a low level, 3.01–5.01 indicating a moderate level, and 5.02–7.0 indicating a high level. The descriptive statistics for AMS are presented in Table 3.

Table 3
Descriptive Statistics for AMS Subscales (N = *433).*

Type of motivation	M + SD	Level
IMTK	4.23 ± 0.86	Moderate
IMTA	4.26 ± 0.83	Moderate
IMTES	4.09 ± 0.85	Moderate
IDR	6.45 ± 0.79	High
ITR	4.25 ± 2.09	Moderate
EXR	4.45 ± 1.85	Moderate
AMO	1.11 ± 0.32	Low

The results in Table 3 reveal that the undergraduates of the UOJ were highly motivated students and had different levels and quality of motivation. In particular, the results indicated that undergraduates had a high level of identified regulation with a mean score 6.45, which was the highest score of motivation among them, as it belonged to extrinsic motivation. Also, they reported a moderate level of both introjected and external regulation with mean values of 4.25 and 4.45, respectively, which also belong to extrinsic motivation. Furthermore, the results showed that undergraduates at the UOJ had a moderate level of all the intrinsic motivation types (IMTK, IMTA, IMTES) with the mean scores of 4.23, 4.26, and 4.09 respectively. The results also revealed that undergraduates at the UOJ had low amotivation with a mean score of 1.11.

Hypothesis Testing

HY1: There exist statistically significant differences in the level of self-determination according to gender.

To answer the first hypothesis, descriptive statistics for SDI according to gender were extracted, and non-parametric MWU test was performed to investigate any statistical significance differences for undergraduates' SDI according to gender. The results are encapsulated in Table 4.

Table 4

Mann-Whitney U-test, Means, Standard Deviations for Undergraduates' SDI scores According to Gender.

Variable	Male (162)			Female (271)			U	p-value
	SR	M	SD	SR	M	SD		
SDI	32,308	7.85	2.78	61,652	8.52	1.8	19,106	.024*

*SR: Sum rank, *: significant value at level .05.*

It is evident from Table 4 that a significant difference existed (U = 19106, p = 0.024) in the level of self-determination in favor of female students (M = 8.52). It implies that female students were more self-determined than male students.

HY2: There exist statistically significant differences in motivation types according to gender.

To answer the second hypothesis, descriptive statistics for AMS subscales were extracted, and non-parametric MWU test was performed to investigate any statistical significance differences for academic motivation type, including IMTK, IMTA, IMTES, IDR, ITR, EXR, and AMO according to gender. The results are summarized in Table 5.

Table 5

Mann-Whitney U-test, Means, Standard Deviations for Undergraduates' AMS Scores According to Gender.

Motivation's Type	Male (162)			Female (271)			U	p-value
	SR	M	SD	SR	M	SD		
IMTK	33,159	4.12	1.01	60801	4.32	0.75	19,957	.099
IMTA	33,856	4.16	0.97	60105	4.34	0.73	20,653	.271
IMTES	30,233	3.91	1.05	63728	4.21	0.69	17,030	.000*
IDR	28,200	6.20	0.84	65761	6.61	0.69	14,997	.000*
ITR	34,283	4.42	2.26	63201	4.54	1.94	17,557	.000*
EXR	34,283	4.42	1.84	59678	4.50	1.84	21,080	.487
AMO	38,456	1.17	0.38	55504	1.07	0.25	18,649	.000*

*Significant value at level .05.

Results demonstrated the existence of a significant difference (U = 17,030, p = .000) in favor of the female students regarding intrinsic motivation to experience stimulation. Therefore, the intrinsic motivation to experience stimulation was found higher among female students (M = 4.21) than male students.

Furthermore, results indicated that identified regulation was significantly differ (U = 14,997, p = .000) in favor of females (M = 6.61). Similarly, the finding demonstrated that a significant

difference existed (U = 17,557, p = .000) in the introjected regulation according to gender in favor of female students (M = 4.54). It means that female students had higher rates of introjected regulation. Table 4 also shows that there existed significant difference in amotivation according to gender (U = 17,557, p = .000) in favor of males (M = 1.17), which indicates that males had higher amotivation than females.

Discussion

The findings of this study showed that undergraduates of the UOJ were not fully self-determined, and they were multi motivated students. They reported a moderate level of IMTK, IMTA, IMTES, ITR, EXR, and high level of IDR and low level of AMO. However, females and males were different regarding the motivation types.

The Level of Self-Determination Among Online Undergraduates at the UOJ Throughout the Pandemic of COVID-19

The findings of this study reveal that the undergraduates at the UOJ were not fully self-determined, and they reported a total mean score of 8.27, which is lower than typical returns, which are around 10 (Hegarty, 2010).

Its indicates that they were less self-determined regarding some learning behaviors but were more in other learning behaviors. SDI means indicate that undergraduates were moderately self-determined. This result could be attributed to the COVID-19 pandemic influences as well as the new learning settings, which could impact their basic psychological needs, i.e., relatedness, autonomy, and competences.

Social distancing was boosted among undergraduates by both COVID-19 pandemic and forced new learning settings, which impact their relatedness. Also, online learning settings impacted students' competence need because it requires digital skills and online learning self-efficacy. Students require more sense of competence to use learning platforms and access Internet resources, as well as more sense of relatedness to communicate and connect with classmates and instructors (Thomas, 2022). Undergraduates of the UOJ were exposed to new instructional strategies. Also, they virtually interacted over the internet, where the social presence is less than face-to-face learning method, which impacted the instructor–student relationships, student–student relationship, making close and friendly relationship and connecting with others. Furthermore, peer

acceptance among students could also be affected by new learning climate (Marshik et al., 2016; Klassen et al., 2012). This social influence highly impacted relatedness, which highly affect students' SDI (Bolliger et al., 2010). These issues contribute to the roughly moderate SDI that they have. Thus, online instructors could facilitate student's internalization process to improve their self-determination by supporting the three basic psychological needs using appropriate practices. Instructor can be supportive by providing students with choices, positive feedback and accommodating their interests (Orsini et al., 2015; Goodboy et al., 2015; Ryan & Deci, 2020). Online instructors can support relatedness in their learning setting by establishing a positive learning climate context, fostering instructor–student relationships, making connections with their students and among students, understanding the students, caring about them, and being friendlier with them, and involving parents and boosting peer acceptance among their students. They could employ ICT tools to foster interaction and collaboration among students to support the need for relatedness (Thomas, 2022; Marshik et al., 2016). This roughly moderate SDI results are consistent with the study conducted by Scifres, et al. (2021), Manzano-Sánchez et al. (2019), Hegarty and Lu (2012), and Hegarty (2010).

Types of Motivation among Online Undergraduates at the UOJ throughout the COVID-19 Pandemic

In accordance with self-determination theory and AMS results, we found that undergraduates were highly motivated by identified regulations indicating that undergraduates were able to recognize the value underlying the regulation, and their actions were accomplished to represent a personally significant and behavioral goal. Students reported that they went to the university because they highly believe that education will enable them to get a job they like, and it will prepare them for this job, help them make better choices related to job orientation, and enhance their job competencies. This finding is consistent with the finding by Cadête et al. (2021), Omari et al. (2021), Kuśnierz et. al. (2020), Ardeńska et al. (2019), Liu et al. (2017), and Caleon et al. (2015). Also, the undergraduates showed a moderate level of external regulation, which suggests that they were moderately extrinsically motivated to learn, i.e., their learning process and academic progress were regulated by external demands. This is attributable to the effort that they made to achieve their goal of passing the course exam, maintaining a high GPA to improve their future life and a chance to have a prestigious job with a better salary in future as they responded to the questions

related to this subscale. This result supports the findings by Ardeńska et al. (2019). However, this finding was inconsistent with Cadête et al. (2021), Caleon et al. (2015), and Liu et al. (2017) findings which reported high level of external regulation among students.

Additionally, undergraduates were moderately motivated by introjected regulation, indicating that the reasons behind their effort in academic tasks and learning are to avoid guilt and shame or to realize ego improvement, indicating that they are regulated to learn by external demand. Undergraduates' responses to the INR subscale demonstrated that they go to university to prove to themselves that they can complete the bachelor's degree and succeed in their studies to feel they were intelligent and important people. This result is in line with the findings by Cadête et al. (2021) and Ardeńska et al. (2019), whereas it is inconsistent with finding by Caleon et al. (2015) and Liu et al. (2017) who they found a high level of introjected regulation among students.

These results also demonstrated that undergraduates have a moderate level of intrinsic motivation to know, indicating that they are engaged in academic tasks and learning process when it is new and they feel satisfied. They responded to this scale and demonstrated that they obtained a moderate level of pleasure when they learn something new, discover new things, or get to know something new related to their interest. This result is in line with studies conducted by Cadête et al. (2021), Ardeńska et al. (2019), and Caleon et al. (2015) who found high level of intrinsic motivation to know among students.

 Furthermore, the students were moderately motivated by intrinsic motivation to experience stimulation. This could be derived from their intense feelings as they communicated their own ideas with others through online platforms, such as discussions or live lectures, when they were engaged in group work, from the pleasure they had when they read interesting works by different authors, and when they read about interesting subjects as they reported on the subscales of intrinsic motivations. This result is consistent with the studies by Cadête et al. (2021), Omari et al. (2021), Kuśnierz et al. (2020), Liu et al. (2017), and Ardeńska et al. (2019), while it is inconsistent with Caleon et al.'s (2015) result, which reported high level of intrinsic motivation to experience stimulation.

 Results also demonstrated that the students were moderately motivated by intrinsic motivation to accomplish, indicating that they were engaged in the learning process and academic activities for the pleasure and satisfaction derived from them. This attributed to their feeling of pleasure and satisfaction when they performed difficult academic tasks and when they surpassed their own

expectations in their study. These students were engaged and motivated in trying to reach a new standard, as they focused on the process of learning and engaging in the learning task rather than the outcome itself. This finding supports the finding by Liu et al. (2017) and Ardeńska et al. (2019), while it is inconsistent with findings by Cadête et al. (2021) and Caleon et al. (2015), which reported this level high.

Also, the results demonstrated that undergraduate students had low amotivation, which could be attributed to their understanding of what they are doing in school and their feelings that they are not wasting their time in school. This could arise from the social influence, well-designed learning setting, and learning materials, such as good teaching practices and strategies, which were combined to prevent them from becoming less motivated. This result is in line with previous studies by Cadête et al. (2021), Omari et al. (2021), Ardeńska et al. (2019), and Liu et al. (2017), whereas it is inconsistent with Caleon et al.'s (2015) finding, who found moderate level of amotivation among students.

Differences in the Level of Self-Determination According to Gender

The results show significant differences in terms of the level of self-determination according to gender in favor of female students. This indicates that female students were more self-determined than males and tended to be more autonomous. This gender difference is attributable to the socialization factors derived from school, family, and society. Social factors impact the satisfaction of psychological needs, which in turn affect the self-determination of students (Olafsen et al., 2018). The socialization factors cause females and males had different learning behavior and orientation, as well as have different skills and set different goals that shape the quality of their academic motivation (Zhang & Lin, 2020).

The prevailing style of socialization supports females to focus more on their learning and educational goals and orientation, to believe in the importance of their education, which in turn lets females have more autonomous motivation to learn unlike males, whose interests in school education changed and decreased over the age. This is in line with the study by Burgt et al. (2018), who found that females are more autonomously motivated than males regarding learning.

Additionally, COVID-19 has impacted the types of motivation differently among gender. Antunes et al. (2020) demonstrated that it has moderately positively impacted female students' engagement, which in turn, enhances the relatedness among females. This relatedness facilitates the

internalization process that enhances their self-determination and makes them more autonomous than males (Pasion et. al., 2020). These results could be attributed to gender differences in information and communication system self-efficacy in favor of females (Hatlevik et al., 2018), which could support female competences required to learn online and boost their SDI. These results are aligned with Zhang and Lin (2020), who found significant gender differences according to the motivational profiles, where females had a high level and tended to be more autonomous and self-determined than males.

Differences in the Motivation Type According to Gender

The study results confirm significant differences in terms of intrinsic motivation to experience stimulation and identified and introjected regulation with regard to gender in favor females. in addition to significant difference in amotivation in favor of male. Studies have attributed gender differences in motivation types to socialization factors and basic phycological needs.

First, results showed significant differences among students in intrinsic motivated to experience stimulation in favor of female students suggesting that females were delighted when learning and doing academic tasks and engaging in learning activity for the pleasing atmospheres that derives from it. These results are attributed to the support female gain from socialization (Alyousef, 2018; Abu-Awwad, 2009), which boosts their intrinsic motivation to experience stimulation. These socialization differences are related to cultural models in Jordanian society. These results are consistent with the results of the aforementioned studies (Kuśnierz et al. 2020, Ardeńska et al. 2019, Orsini et al., 2015)

Second, the results demonstrated significant differences among students in identified regulation in favor of female students, which indicates that females engaged in learning activity because it is recognized as worthy on a personal level. This can be explained in view of the guidance provided by their family and society since their childhood that focuses on the value and importance of learning for females, which can then support their future. This result also in line with studies conducted by Kuśnierz et al., (2020), Ardeńska et al., (2019) and Orsini et al., (2015).

Also, the study results showed significant differences in introjected motivation according to gender in favor of females. This indicates that the degree of awareness and desire for constructive competition is greater among females than males. Female students engaged in academic activity to avoid guilt, and for self-esteem and ego enhancement. This is attributable to the fact that females

at university become more aware of their professional desires and practical ambitions, as they search for competition with themselves and with others, in addition to the fact that females in Jordan grow up hearing a lot of advice and directions related to the importance of learning (Abu-Awaad, 2009; Alyousef; 2018). This finding is aligned with that of Kuśnierz et al. (2020), Ardeńska et al., (2019) and Orsini et al., (2015).

Furthermore, the study results demonstrated significant differences in amotivation according to gender in favor of males, which indicates that males lack academic motivation more than females. This can be explained by social and economic issues that changed their goal from the educational to other goals. Abu-Awaad (2009) noted that male students in Jordan view the educational process as economically inviable, further male students are spent more time outside their home which effect their motivation in doing their learning task (Alyousef, 2018). This result is in line with the findings by Kuśnierz et al. (2020), Ardeńska et al. (2019), Asif et al. (2018), Caleon et al. (2015), and Orsini et al. (2015). However, these findings contradict the study by Saygili (2018), who found no gender differences according to any type of motivation.

Conclusion and Implications

This study is the first to classify motivation types according to self-determination theory among Jordanian undergraduates in online learning setting throughout the COVID-19 pandemic. The findings of the study revealed that undergraduates at the UOJ were multi motivated students but not fully self-determined. There is a significant difference in motivation's types according to gender, female students were more motivated to learn than male student, similarly they were more self-determined. Regarding these results, more attention should be given to undergraduates of UOJ, instructors in on line learning setting should support online students to enhance the quality of their motivation, especially male students. Online instructors can support the three basic psychological needs among online students to enhance their self-determination and intrinsic motivation. This can be achieved using a well-designed online setting, course structure, and learning material, along with intrinsic motivational strategies. Online instructors should be autonomy-supportive and use constructive online settings that minimize controls, offer choices, provide feedback, more student responsibility, more self-initiation behavior, and more social presence and connections.

Despite the limitations of the study sample, its results can serve as a guide for decision-makers at the UOJ regarding motivations among online students. Researchers are encouraged to conduct a replicate study that investigates academic motivation profiles in relation to gender. The implications of this study are anticipated to prompt online instructors, educational stakeholders, and decision-makers to employ intrinsic motivational strategies and construct an autonomy-supportive online learning setting to sustain and improve the quality of online students.

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