

Motivation in Synchronous Hybrid Graduate Business Programs: A Self-Determination Approach to Contrasting Online and On-Campus Students

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Abstract

Synchronous hybrid delivery, defined as a course option where mutually exclusive groups of online and on-campus students are taught simultaneously using real-time audio and video technology, is becoming more common in higher education. This paper reports on a study whose objective was to investigate how online versus on-campus attendance in synchronous hybrid graduate business programs affects the relationships among students' need satisfaction, motivation, and perceived success. Ryan and Deci's self-determination theory was used to guide the analyses and interpret the results. Survey data involving 112 hybrid graduate business students revealed that need satisfaction significantly predicted several categories of motivation, which in turn predicted perceived success. For online students, perceived favorability of online and on-campus delivery was significantly correlated with key dimensions of need satisfaction and perceived success. The results also indicated that there are few significant differences on types of motivation and psychological needs between online and on-campus hybrid students; an exception was that online students reported significantly lower levels of relatedness than their on-campus counterparts. Differences based on attendance mode, may not be as substantial as was once thought.

Keywords: synchronous hybrid delivery, motivation, self-determination theory, graduate business education

Introduction

The physical classroom has long been the traditional learning environment in graduate business education; however, attending on-campus classes is no longer ideal for many contemporary students who are bound by work, family, or geography ([Bocchi, Eastman, & Swift, 2004](#)). This growing need for flexibility has set the stage for rapid innovations in course delivery modes. Compared to the normal annual growth of the student population (just over two percent since 2002), a recent study by [Allen and Seaman \(2011\)](#) found that enrollment in nontraditional delivery modes climbed over 12.9% during the same period. To capture this growing market, many postsecondary institutions have implemented *synchronous hybrid delivery* as a course option that provides synchronous instruction to both on-campus and online students using real-time audio and video technology ([Roseth, Akcaoglu, & Zellner, 2013](#)). In accordance with this definition, synchronous hybrid delivery involves mutually exclusive groups of online and on-campus students who receive instruction simultaneously in a single learning environment. Indeed, synchronous hybrid programs offer an appealing opportunity to increase profits without significant infrastructural changes; however, it is unclear if current web conferencing technology provides students with the necessary antecedents for optimal learning.

[Artino and Jones \(2012\)](#) argued that learning online is inherently different from learning in a traditional classroom. [Chen and Jones \(2007\)](#) suggested that the differences in online and on-campus students' experiences in synchronous hybrid learning environments likely stem from divergent interpretations of the prevailing social context. Unlike on-campus students who have an instructor and peers present in a physical classroom, students who attend online must initiate their learning within a less tangible learning interface ([Tuckman, 2007](#)). Despite this disconnect with the physical environment, [Artino \(2008\)](#) argued that technology-mediated courses encourage student motivation. However, little is known about how specific psychological elements affect student motivation in synchronous hybrid learning environments. The role of need satisfaction (autonomy, competence, relatedness) and motivation (intrinsic, extrinsic, amotivation) within a given context was initially addressed by [Deci and Ryan's \(1985\)](#) self-determination theory (SDT). The purpose of this study was to explore the relationships among hybrid attendance mode (online vs. on-campus), need satisfaction, motivation, and perceived success for graduate business students. Rather than assessing which attendance mode is more effective, the benefit of comparing online and on-campus students' need satisfaction and motivation lies in the possibility of identifying certain aspects that, if properly nurtured, may result in more successful student learning. In short, educators need to understand how students' motivation can be supported to increase their achievement in synchronous hybrid learning environments.

Literature Review

Self-Determination Theory of Motivation

SDT systematically explicates the relationship between need satisfaction and motivation within a given context ([Deci & Ryan, 1985](#)). Deci and Ryan postulated that in order for an individual to become a facilitator of his or her actions, conditions within the associated social context must provide opportunities for need satisfaction in terms of autonomy (the quality of being self-governing), competence (individuals' perceptions that they have the capacity to complete required tasks), and relatedness (feeling connected with others). To this end, optimal motivation occurs when the social context provides students with opportunities to satisfy all of their basic psychological needs (Ryan & Deci, 2009).

[Ryan and Deci's \(2000b\)](#) SDT framework organizes human motivation on a continuum ranging from intrinsic motivation to extrinsic motivation and amotivation. Intrinsically motivated individuals perform a behavior for the inherent satisfaction it provides; that is, they find the activity interesting or enjoyable. Extrinsically motivated individuals perform a behavior to attain a separable outcome, while amotivated individuals either choose not to perform a behavior or do so without intent. Ranging from externally to internally focused regulation, Ryan and Deci further divided extrinsic motivation into the following four categories: external, introjected, identified, and integrated. External regulation occurs when behaviors are performed to meet an external demand or obtain an external reward. For example, a student who does an assignment to receive praise from the instructor or to avoid confrontation is externally regulated. Introjected regulation occurs when behaviors are performed to avoid internally imposed feelings of guilt or anxiety. Introjected regulation can also result from a sense of duty. For example, a student who makes a point to attend class on time to avoid feeling like a bad person is regulated by introjects ([Deci, Vallerand, Pelletier, & Ryan, 1991](#)). Identified regulation occurs when behaviors are performed because the action is deemed congruent with the individual's goals. The utility value of the activity allows the

person to feel a sense of volition about behaving. An example would be a student who willingly does extra work in order to complete a course or gain a degree that is important for success in his or her field. Lastly, integrated regulation occurs when behaviors are performed because the actions involved in the activity have been fully assimilated to the individual's values and needs ([Ryan & Deci, 2000b](#)). A student governed by integrated regulation may identify with being a good student and that identification has become integrated with other relevant aspects of the student's sense of self ([Deci et al., 1991](#)).

In regard to motivation, Reeve (2005) contended that need fulfillment is required to provide students with natural motivation for learning. Prior SDT research in education has shown that supporting students' needs promotes intrinsic motivation, which is related to a number of desirable outcomes such as persistence, creativity, and perceived success (e.g., [Filak & Sheldon, 2003](#)). Despite the strong foundation of SDT in traditional classroom settings, Ryan and Deci (2002) suggested that the same person may demonstrate different types of motivation in different social contexts.

If students' motivation can change based on their social context, how might the relationships between need satisfaction, motivation, and perceived success develop in technology-enriched learning environments? A study of two online programs conducted by [Chen and Jang \(2010\)](#) offered evidence for a mediating effect of need satisfaction between contextual support provided by the instructor and student motivation. Another study conducted by [Rienties, Tempelaar, Van den Bossche, Gijssels, and Segers \(2009\)](#) found that student motivation is a key determinant of quality in online learning environments; however, a comparative analysis by [Rovai, Ponton, Wighting, and Baker \(2007\)](#) reported no differences between online and on-campus students in terms of extrinsic and amotivation.

A myriad of elements affect students in technology-enriched learning environments, yet put simply, online and on-campus students perceive instructional environments very differently; thus, differences in motivation of online and on-campus students continues to be an intriguing area of research. [Giesbers, Rienties, Tempelaar, and Gijssels \(2013b\)](#) found that motivation is a critical factor affecting communication, participation, and performance in technology-mediated delivery modes. Devi (2001) claimed that if students intend to succeed in technology-enriched courses, they must become aware of the level of motivation that they require in order to sustain their interest. In fact, [Rovai et al. \(2007\)](#) used multivariate analysis of variance to determine that asynchronous online students possess stronger intrinsic motivation than traditional, face-to-face (F2F) students. Similarly, Wighting, Liu, and Rovai (2008) used discriminant analysis to determine that stronger intrinsic motivation in online students was the most important predictor in distinguishing between online and traditional students.

In relation to the current study on synchronous hybrid programs, research on media choice has found that synchronous communication can increase users' motivation ([Robert & Dennis, 2005](#)). Combining SDT with theory on technology acceptance, [Giesbers et al. \(2013b\)](#) reported that students who participated in optional synchronous web conferencing sessions had significantly higher levels of intrinsic motivation. Without question, student motivation remains an important variable in the study of technology-enriched learning environments. Specifically, SDT provides a rigorous empirical framework to further explore the role of motivation in distance education, including programs that offer synchronous hybrid delivery as a course option.

Technology-Enriched Learning Environments and Delivery Modes

Schlosser and Anderson (1994) stated that the primary goal of distance education is to offer online students an educational experience as similar as possible to that of on-campus students. Given the staggering array of delivery options available, significant variations exist regarding the use of terms associated with distance education. Technology-enriched learning environments have been variously termed *virtual*, *distributed*, *remote*, *blended*, *e-learning*, *web-enhanced*, *Internet-based*, and *hybrid*. More specific to the current study, a number of terms have emerged from the literature that describe the simultaneous teaching of online and on-campus students. Some of these terms, such as *blended synchronous learning* ([Bower, Kennedy, Dalgarno, & Lee, 2011](#); [Bower, Kenney, Dalgarno, Lee, & Kennedy, 2013](#); [Bower et al., 2012](#)) and *synchromodal learning* ([Bell, Cain, & Sawaya, 2013](#); [Cain, Sawaya, & Bell, 2013](#)), emphasize the distinctive real-time attribute of this delivery mode; whereas other terms, such as *multi-access learning* ([Irvine, 2009](#); [Irvine, Code, & Richards, 2013](#)), underscore improved flexibility. In this study, to differentiate from labels that may suggest an asynchronous component, the term *synchronous hybrid delivery* is used to describe a single learning environment where online and on-campus students receive instruction simultaneously ([Roseth et al., 2013](#)).

In spite of the diverse nomenclature within the field of educational technology, recent studies of simultaneous teaching environments have highlighted several benefits of synchronous hybrid programs. In terms of student access to postsecondary education, [White, Ramirez, Smith, and Plonowski \(2010\)](#) found that synchronous hybrid programs allow institutions to meet projected increases in enrollment with limited classroom space. [Irvine et al. \(2013\)](#) stated that effective synchronous hybrid programs place the student at the center of the learning experiences by offering flexible course access options. Similarly, [Bell et al. \(2013\)](#) asserted that students enrolled in synchronous hybrid programs are favorably located "at the intersection of technology, content, and pedagogy" (p. 1632). Based on findings from a quasi-experimental investigation, [Shield, Atweh, and Singh \(2005\)](#) established that synchronous tutorials can be used to develop a sense of community among online and on-campus students. [Bower \(2011\)](#) noted that using a combination of real-time audio and visual elements allows the instructor to leverage students' dual-processing capabilities – an interaction he termed the modality effect. Lastly, [Vu and Fadde \(2013\)](#) discovered that permitting backchannel text-based communication among students in synchronous learning environments has the potential to not only reduce the instructor's burden of facilitating classroom chats, but also promote student interaction across attendance modes.

This study focused on synchronous hybrid delivery. However, the strengths and weaknesses of various other technology-enriched formats must be considered as most delivery modes have coevolved over the years. While the intent of this study was to explore the psychological elements that affect student success in synchronous hybrid courses, considering the differences between various delivery modes provides a more comprehensive account of technology-mediated course deliver in contemporary higher education. This, in turn, provides a more complete understanding through which to contextualize synchronous hybrid learning environments.

Despite the advantages of synchronous hybrid delivery described above, asynchronous online delivery remains the most common form of technology-enriched graduate business programs ([Gibson, 2008](#)). Taking a step away from the purely asynchronous model, a number of researchers and practitioners have also begun to focus on blended learning as a course delivery option ([Chen & Jones, 2007](#); [Gibson, 2008](#)). This approach blends asynchronous online learning with synchronous classroom sessions ([Hughes, 2007](#)).

Even though blended learning is gaining acceptance in many postsecondary institutions, there is some debate in the literature as to whether this delivery mode has a unique effect on student performance beyond traditional, F2F instruction (for a review see [Vignare, 2007](#)). The synchronous hybrid delivery mode, therefore, has greater potential for achieving Schlosser and Anderson's (1994) standard for experiential education. In fact, in a comparison of asynchronous and synchronous e-learning courses, [Hrastinski \(2008\)](#) found that synchronous communication has a greater potential to enhance participation in online discussion. [Giesbers, Rienties, Tempelaar, and Gijssels \(2013a\)](#) also reported that synchronous communication supports student engagement and collaborative knowledge construction. Enhanced participation and engagement may, in turn, positively influence satisfaction and retention rates, which are important metrics in any postsecondary program.

It is often broad educational goals that steer how postsecondary programs invest in and use technology ([Humphreys, 2012](#)). To this end, synchronous hybrid delivery has the benefit of preparing students for careers in our technology-driven society. According to a study published by the Association of American Colleges and Universities ([National Leadership Council for Liberal Education and America's Promise, 2007](#)), employers want postsecondary institutions to place more emphasis on training students how to communicate and work effectively in synchronous hybrid environments. The 2013 higher education edition of the New Media Consortium's *Horizon Report* ([Johnson et al., 2013](#)) also noted that the online/on-campus collaboration skills students develop in synchronous hybrid learning environments can be leveraged across all sectors of the economy.

The unique benefits of synchronous hybrid programs have recently captured the attention of many educators and researchers, yet this delivery mode shares several strengths and weaknesses with strictly asynchronous online programs. While it has been reported that completely online programs offer learners added convenience and flexibility ([Bocchi et al., 2004](#); [Chen & Jones, 2007](#); [El Mansour & Mupinga, 2007](#); [Smith, 2001](#); [Terry, 2007](#)), several studies found that students attending distance programs over the Internet experience feelings of isolation ([Bocchi et al., 2004](#); [El Mansour & Mupinga, 2007](#); [Gibson, 2008](#); [Ponzurick, France, & Logar, 2000](#)). The profound support for this finding suggests that students enrolled in technology-enriched programs have different perceptions of their learning

environment. [Artino and Jones \(2012\)](#) lamented that a departure from the pure F2F model "means learning without some of the important temporal, spatial, and intellectual supports provided in traditional classrooms" (p. 170). Accordingly, some studies have found that strictly online students often earned lower grades than individuals who completed the same course in a traditional, on-campus setting ([Gibson, 2008](#); [Terry, 2007](#)). The importance of positive educational outcomes supports the investigation of how students' perceptions of need satisfaction are associated with motivation, and in turn, perceived success.

In a traditional educational setting, instructors can provide students with opportunities for need satisfaction that in turn facilitate optimal learning, engagement, and well-being ([Guay, Ratelle, & Chantal, 2008](#)). However, previous research by [Dabbagh and Kitsantas \(2004\)](#) suggested that students in technology-enriched delivery programs must take greater responsibility to self-regulate their learning. While a hybrid student may have a greater burden to self-regulate, SDT posits that the act of becoming a facilitator of one's learning is associated with positive educational outcomes, such as optimal motivation and success ([Deci & Ryan, 2008](#)). To this end, [Ryan and Deci \(2000a\)](#) noted that intrinsic motivation reflects the natural human motivation to learn, while extrinsic motivation can reflect both external control and self-regulation. Therefore, more research is needed to explore how the relationships postulated in SDT unfold in technology-mediated courses.

The Current Study: Exploring SDT in Synchronous Hybrid Graduate Business Programs

The aim of the current study was to investigate how online versus on-campus attendance in synchronous hybrid graduate business programs affects the relationships among students' need satisfaction, motivation, and perceived success. These relationships were examined in a synchronous hybrid Master of Business Administration (MBA) program and a synchronous hybrid Master of Public Administration (MPA) program, both of which provide synchronous instruction to a group of online and on-campus students. Given the high profile of asynchronous online learning in the literature, few existing studies have focused on the synchronous hybrid modality. This study was also unique because it examined an emerging delivery mode from the perspective of SDT – a combination that is underdeveloped in the literature (see Figure 1). The results of this study may be useful to educational practitioners in implementing synchronous hybrid learning as an option for program delivery. The analyses below were driven by two research questions:

- 1) Do online and on-campus students in synchronous hybrid programs perceive need satisfaction differently?
- 2) How are these perceptions of need satisfaction associated with SDT-based motivation, and in turn perceived success?

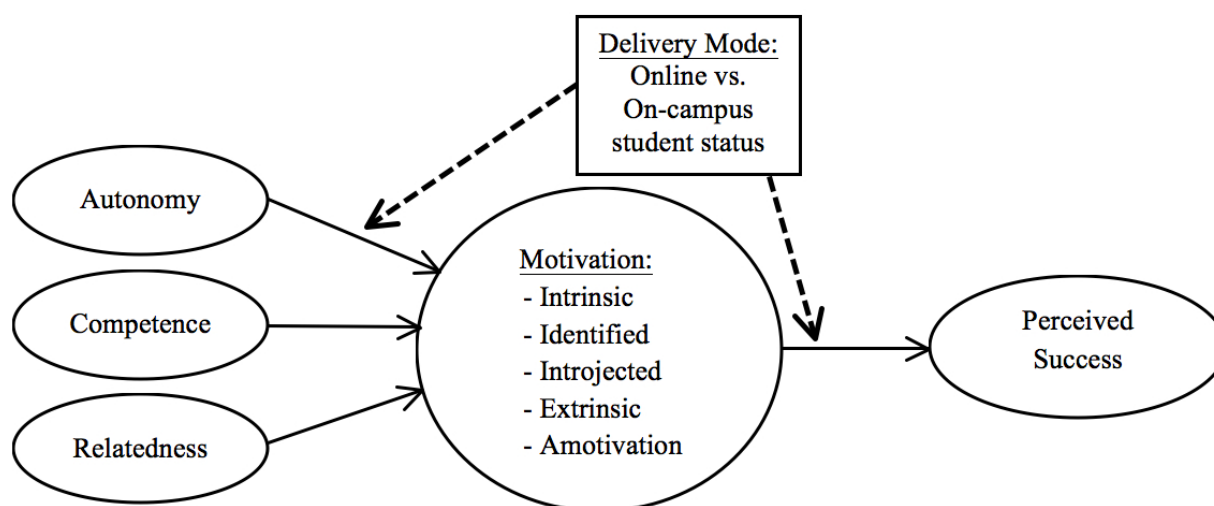


Figure 1. Conceptual model used to explore the dimensions of the SDT in synchronous hybrid learning environments

Method

Participants and Procedure

Participants were students enrolled in either the synchronous hybrid MBA or MPA program offered in an internationally accredited college of business at a large research university in the Midwestern United States. The college of business is credentialed by the [Association to Advance Collegiate Schools of Business \(2013\)](#), which requires that both the MBA and MPA program meet the same strict standards concerning assessment, faculty qualifications, and program delivery options. The MBA program requires students to complete 33 credits, and the MPA program requires 35 credits. Most full-time students complete these requirements in 2 years. Although the MBA and MPA programs differ in terms of core courses, both programs aim to prepare students for mid- to upper-level administrative positions, thus there is a certain degree of overlap between program curricula. For both the MBA and MPA programs, students are allowed to take courses in any sequence they desire, and therefore, there are no individual differences based on the curricula or students' year in the program. In order to improve student access, all courses within the MBA and MPA programs have been offered in the synchronous hybrid format since the 2007 Fall semester using [Adobe Connect](#) web conferencing software.

Each year approximately 100 new students enroll in the synchronous hybrid MBA program and 30 new students enroll in the synchronous hybrid MPA program. Even though both programs exhibit a similar split in enrollment based on attendance mode (approximately 60% online, 40% on-campus), all students are required to attend class in real time. Once students enroll in either the online or on-campus delivery option, they are not permitted to switch between attendance modes because different program fees are allocated to students in each faction of the synchronous course. Furthermore, bandwidth constraints restrict students from participating in multiple delivery modes in a given term. Nevertheless, the features of the synchronous hybrid systems through which the MBA and MPA programs are delivered are essentially identical.

Near the middle of the 2013 Spring semester, 273 students were sent an e-mail containing a hyperlink to an online survey. In exchange for participation, students were entered into a drawing for an Apple iPad Mini. After 3 weeks of data collection, 120 individuals accessed the survey. Eight participants were excluded from the study due to missing data.

The final sample for this study consisted of 112 participants (68 male, 44 female) including 76 participants who were enrolled in the MBA program and 36 in the MPA program (59 part time, 53 full time). The participants' ages ranged from 20 to 59 years ($M = 29.70$, $SD = 7.23$), and the vast majority (102) of them were White/Caucasian. Participants' employment status consisted of 67 in full-time work, 35 in part-time work, and 10 unemployed; professional work experience averaged 5.20 years ($SD = 6.80$). Attendance in the synchronous hybrid programs consisted of 44 on-campus and 68 online. On average, participants had completed 15.88 credit hours in a synchronous hybrid learning environment at the time the survey was administered ($SD = 10.15$).

Measures

- *Need satisfaction.* [Ilardi, Leone, Kasser, and Ryan's \(1993\)](#) 21-item Work Motivation Form-Employee (WMF-E) scale was adapted to measure participants' perceived level of need satisfaction in either the synchronous hybrid MBA or MPA programs (1 = *not at all true*, 7 = *very true*). Ilardi et al.'s original scale was used to assess employees' experiences of autonomy, competence, and relatedness at work. The scale was adapted for use in this study by reframing the object focus of each item to reference the learners' synchronous hybrid program. Items on this scale are distributed among three subscales: seven items address autonomy (e.g., "I feel like I can make a lot of inputs to deciding how to complete my MBA/MPA program"), six items address competence (e.g., "People in my MBA/MPA program tell me I am good at what I do"), and eight items address relatedness (e.g., "I consider the people in my MBA/MPA program to be my friends").

A confirmatory approach to factor analysis was used to test the quality of the measured variables as indicators of the corresponding latent construct. Because sample size was relatively small, a one-factor model was tested in order to keep the number of parameters to be estimated at a minimum. The results indicated that two items should be removed from the autonomy scale due to weak factor loadings ("I feel pressured while enrolled in my MBA/MPA program" and "When I am attending MBA/MPA classes, I have to do what I am told"). After

these items were removed, a single-factor solution was found that explained 44.9% of the variance. Factor analysis of the competence and relatedness scales resulted in a single-factor solution for both constructs that accounted for 35.9% and 40.3% of the variance, respectively. The Cronbach's alphas for autonomy ($\alpha = .68$), competence ($\alpha = .63$), and relatedness ($\alpha = .76$) were adequate for this exploratory study.

- *Student motivation.* [Vallerand et al.'s \(1992\)](#) 20-item Academic Motivation Scale-College (AMS-C) was used to assess participants' motivation along the SDT continuum. Participants were asked to indicate how closely statements corresponded with the reasons they are pursuing their MBA or MPA (1 = *does not correspond at all*, 7 = *corresponds completely*). Items on the AMS-C are equally divided among its five subscales: intrinsic motivation (e.g., "Because my studies allow me to continue to learn about many things that interest me"), identified regulation (e.g., "Because I believe that a few additional years of education will improve my competence as a worker"), introjected regulation (e.g., "Because of the fact that when I succeed in my MBA/MPA program I feel important"), external regulation (e.g., "In order to have a better salary later on"), and amotivation (e.g., "I can't see why I am in my MBA/MPA program, and frankly, I couldn't care less"). Although [Ryan and Deci's \(2000b\)](#) SDT framework also includes integrated regulation as a type of motivation, it is not assessed by the AMS-C.

The results of factor analysis confirmed that all of the items aligned with their corresponding subscale with strong factor loadings. A single-factor solution that explained a significant portion of the variance in the data was found for each subscale, that is, intrinsic motivation (80.0%), identified regulation (59.2%), introjected regulation (73.1%), external regulation (64.5%), and amotivation (76.0%). Each subscale was also found to have sufficient internal reliability with Cronbach's alphas ranging from .75 to .88. The subscale items were averaged into their respective motivation variables.

- *Delivery mode perceptions.* Participants' predisposed modality perceptions were assessed with a single item, "Regardless of how you attend the MBA/MPA program, how would you rate the following delivery modes in terms of learning" (1 = *highly unfavorable*, 3 = *neither favorable nor unfavorable*, 5 = *Highly favorable*). This item was asked in regard to both online ($M = 3.57$, $SD = 1.09$) and on-campus instruction ($M = 4.19$, $SD = 1.05$).
- *Perceived success.* Participants' perceptions of success were assessed using seven items adapted from [Hall, Hladkyj, Perry, and Ruthig's \(2004\)](#) Perceptions of Academic Success scale (1 = *very unsuccessful*, 7 = *very successful*). An example item from the scale is, "How successful do you feel in achieving the learning goals you set for yourself?" Factor analysis indicated a single factor solution with all of the items having strong factor loadings. The factor explained 59.8% of the variance in the data. The seven items were averaged with higher scores indicating greater perceived success ($\alpha = .89$).

Results

Descriptive statistics were first run to evaluate variable distributions. All of the single items and summed scales approximated a normal distribution. Tests of group differences were next conducted to compare mean scores on continuous outcome variables between the two groups (online vs. on-campus). Zero-order correlations were calculated to explore the bivariate relationships among the continuous study variables for each group. Lastly, simultaneous multiple regressions were used to test the predictive effects of the basic needs on motivation, as well as the effects of motivation on perceived success.

Mean Differences

The first set of analyses used independent sample *t*-tests to explore group differences (see Table 1). As expected, on-campus students held significantly more favorable perceptions of on-campus delivery than online students. Accordingly, online student reported significantly more favorable perceptions of online delivery than on-campus students. In terms of group differences involving basic needs, motivation, and perceived success, the only statistically significant finding was that online students reported lower levels of relatedness than on-campus students. This is noteworthy given that the synchronous hybrid delivery system was designed to promote real-time communication and integration. Interestingly, no significant differences existed between online and on-campus students in terms of the five types of motivation, including the extent to which participants reported being intrinsically and extrinsically motivated. Means scores on the perceived success scale also did not differ significantly between the two groups.

Table 1. Comparison of on-campus and online students on delivery mode perceptions, need satisfaction, motivation, and perceived success

Dependent Variable	Independent Variables						Possible Range	Mean Difference	<i>t</i>	<i>df</i>	<i>p</i>
	On-Campus			Online							
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>					
Favorability to on-campus ^a	44	4.50	0.82	60	3.97	1.15	1-5	.53	2.76	101.95	.01
Favorability to online	42	3.10	1.10	68	3.87	0.98	1-5	-.77	-3.84	108	.00***
Autonomy	41	5.15	0.86	66	5.08	0.94	1-7	.07	.37	105	.71
Competence	41	4.99	0.84	66	5.12	0.90	1-7	-.14	-.78	105	.44
Relatedness	42	5.15	0.84	67	4.74	0.85	1-7	.41	2.46	107	.02
Intrinsic ^a	43	5.38	1.03	68	5.30	1.43	1-7	.08	.33	107.05	.75
Identified	44	5.33	1.21	68	5.39	1.06	1-7	-.06	-.30	110	.77
Introjected	43	4.30	1.47	68	4.19	1.70	1-7	.11	.35	109	.72
Extrinsic	43	4.91	1.25	66	5.04	1.30	1-7	-.13	-.54	107	.59
Amotivation	44	2.07	1.27	68	1.78	1.17	1-7	.29	1.25	110	.21
Perceived success	41	5.52	0.88	67	5.49	0.99	1-7	.03	.16	106	.87

Note. *N* = 112 (44 on-campus, 68 online). Differences in group sizes reflect missing data.

^a*p* < .05 for Levene's test for homogeneity of variances.

****p* < .001.

Correlations

In support of [Deci and Ryan's \(1985\)](#) SDT, numerous significant correlations emerged among the bivariate relationships tested (see Table 2). In terms of the basic needs, significant large positive correlations were found among all three of the averaged scales (autonomy, competence, and relatedness) in both the on-campus and online group. Furthermore, in both on-campus and online groups, the number of credit hours completed was found to have a significant large positive correlation with relatedness. Nearly all of the dimensions of need satisfaction for both groups were found to have significant correlations with intrinsic motivation ($r = .27$ to $.44$) and amotivation ($r = -.71$ to $-.36$). Due to high multicollinearity among the types of motivation found in the interior of the SDT spectrum (identified, introjected, extrinsic), it was anticipated that the majority of the significant correlations would be observed at the endpoints of the motivation continuum (intrinsic motivation and amotivation).

Table 2. Correlations between credit hours completed, delivery mode perceptions, need satisfaction, motivation, and perceived success by group

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1) Credit hours completed		.25	.09	.18	.29*	.21	.02	-.11	-.02	-.02	.07	.33**
2) Favorability to on-campus	-.04		.47*	.16	.30*	.30*	.01	-.05	.13	.17	-.27*	.26*
3) Favorability to online	-.04	.37*		.36**	.43**	.32**	-.01	-.17	-.12	.25*	.21	.35**
4) Autonomy	.17	.21	-.05		.57**	.65**	.27*	.12	.15	.00	-.20	.43**
5) Competence	.30	.33*	.01	.70**		.68**	.34**	.19	.03	-.15	-.36**	.56**
6) Relatedness	.40*	.32*	-.07	.64**	.71**		.33**	.12	.22	.02	-.24	.44**
7) Intrinsic	.26	.00	.20	.44**	.28	.31*		.58**	.53**	-.11	-.12	.23
8) Identified	.15	.12	.11	.31	.34*	.41**	.36*		.41**	.29*	-.09	.07
9) Introjected	.22	.34*	.39*	.11	.27	.33*	.34*	.53**		.27*	.17	.04
10) Extrinsic	-.02	-.05	.21	.08	.08	.22	.21	.74**	.36*		.15	-.07
11) Amotivation	-.09	-.18	.10	-.57**	-.71**	-.58**	-.03	-.19	-.03	-.01		-.24*
12) Perceived success	.38*	.09	.14	.58**	.58**	.62**	.38*	.50**	.32*	.33*	-.56**	

Note. *N* = 112. The on-campus group (*n* = 44) correlation matrix is along the lower diagonal, while the matrix for the online group (*n* = 68) is along the upper diagonal.

p* < .05. *p* < .01.

Large positive correlations were found among almost all of the independent pairings between the intrinsic, identified, introjected, and extrinsic motivation variables for both groups. Previous research on SDT has shown that adjacent subscales along the self-determination continuum tend to be more positively correlated than those more distant ([Standage & Treasure, 2002](#)). Therefore, the large positive correlation between identified regulation and extrinsic motivation for the on-campus students is somewhat incongruent with prior research involving the SDT subscales. Conversely, the correlation between identified regulation and extrinsic motivation for the online students was within the range of prior research. This suggests that the two groups indeed have a distinct motivational profile. Despite this idiosyncrasy involving identified regulation and extrinsic motivation, the correlation between intrinsic and extrinsic motivation was found to be nonsignificant for both online and on-campus students. Furthermore, in accordance with [Deci and Ryan's \(1985\)](#) SDT, amotivation was not significantly correlated with any of the other categories of motivation for either group.

For the on-campus students, intrinsic, identified, introjected, and extrinsic motivation were significantly correlated with perceived success ($r = .32$ to $.50$). Conversely, amotivation had a significant large negative correlation with perceived success. The only significant motivational correlation for the online students was the moderate negative association between amotivation and perceived success. For both groups, the number of credit hours complete in the program had a significant large positive correlation with perceived success.

Another analysis involved correlating participants' perceptions of on-campus and online delivery modes with the other study variables. Perceived favorability of on-campus instruction was significantly correlated with competence and relatedness for both the online and on-campus group ($r = .30$ to $.33$). Also, perceived favorability of online instruction was significantly correlated with all three dimensions of need satisfaction for the online group ($r = .32$ to $.36$). Surprisingly, none of these same correlations between the basic needs and perceived favorability of online instruction were significant for the on-campus group. In terms of the types motivation, few significant correlations were observed involving participants' perceptions of on-campus and online delivery modes. For the online group, the data showed that both perceived favorability of online and on-campus delivery had significant large positive correlations with perceived success, suggesting that online students' predisposed perceptions of learning through different modalities may have an effect on their success.

Regressions

In order to investigate possible predictive differences in regard to attendance mode, all regressions were performed in succession on the following two groups: on-campus students only and online students only (see Table 3). The separate analyses conducted for the on-campus and online students both found that the basic needs scales together significantly predicted the endpoints of the SDT continuum, that is, intrinsic motivation and amotivation ($R^2 = .13$ to $.50$). As an individual predictor, competence had a significant large negative effect on amotivation for both groups. This predictive relationship was particularly intriguing for the online students as the beta weight for competence in this group was larger than the R^2 value for the overall portion of variance in amotivation explained by the three basic needs collectively. This discrepancy, in conjunction with the observation that competence is strongly correlated with amotivation, suggested that competence may be a partial suppressor variable ([Nimon, 2010](#)). To this end, it was indeed found that removing competence from the regression model increased the predictive effect of one of the other predictors, autonomy, by .10; yet, the beta weight for autonomy remained non-significant.

Table 3. *Regressions between basic needs and categories of motivation for on-campus and online students*

	On-Campus Students					Online Students				
	Intrin.	Ident.	Introj.	Extrin.	Amot.	Intrin.	Ident.	Introj.	Extrin.	Amot.
Autonomy	.49*	.01	-.25	-.11	-.18	.07	.02	.08	.03	-.02
Competence	-.14	.16	.26	-.08	-.49*	.25	.19	-.22	-.33 [†]	-.45**
Relatedness	.09	.29	.30	.37	-.10	.09	-.02	.31	.24	.13
R^2	.21*	.19 [†]	.14	.07	.50***	.13*	.04	.07	.06	.15*

Note. $N = 112$ (44 on-campus, 68 online).

[†] $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

In spite of this irregularity, the results identified several large standardized beta coefficients among the dimensions of need satisfaction and the categories of motivation. For both groups, nearly half of the non-significant betas were greater than .15, suggesting that these effects might become significant if a larger sample with more statistical power were obtained. The multicollinearity that stems from the high correlations between the basic needs may also have limited the number of significant relationships observed.

When taken together, the five types of motivation significantly predicted perceived success for both groups with the R^2 indicating that these regression models explained a notable portion of the overall variability, more so for the on-campus than the online students (see Table 4). In terms of individual predictors, the endpoints of the SDT continuum, specifically intrinsic motivation and amotivation, had significant effects on perceived success for both on-campus and online students; however, the magnitude of these predicative effects differed between the groups. For online students, intrinsic motivation was a much stronger predictor of perceived success than amotivation, while the reverse was true for on-campus students. These findings suggest that motivation remains a critical factor affecting a students' success in synchronous hybrid programs, regardless of attendance mode.

Table 4. *Regressions between motivation and perceived success for on-campus and online students*

	On-Campus Students	Online Students
Intrinsic	.29*	.41*
Identified	.15	-.20
Introjected	.06	.11
Extrinsic	.16	.10
Amotivation	-.50***	-.22 [†]
R^2	.54***	.14 [†]

Note. $N = 112$ (44 on-campus, 68 online).

[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Discussion

As online delivery options continue to gain momentum in our technology-rich society, synchronous hybrid delivery is becoming more common in higher education; however, little is known about how this learning environment relates to student need satisfaction and motivation. Although the results of this study showed that there is a difference in the motivational dimensions experienced by online and on-campus students, discrepancies based on attendance mode may not be as large or as problematic as is commonly thought. The first objective of the current study was to contrast online and on-campus students in synchronous hybrid learning environments. The results of independent sample t -tests indicated that there are few significant differences between online and on-campus students in terms of need satisfaction, motivation, and perceived success. These findings are consistent with [Rovai et al. \(2007\)](#) who reported no differences between online and on-campus students in terms of extrinsic and amotivation. In contrast, previous research has found online students to have significantly higher levels of intrinsic motivation over traditional students ([Rovai et al., 2007](#); Wighting et al., 2008). These studies, however, strictly compared students enrolled in asynchronous online and tradition learning environments, not synchronous hybrid programs. This discrepancy in findings suggests that synchronous hybrid learning environments may provide a more equitable approach to distance education. This information may be valuable for educational administrators in terms of program-level assessment of synchronous hybrid delivery options.

One exception, however, was students' feelings of relatedness. This observed difference supports previous research that showed online learners are more likely to report feelings of isolation than their on-campus counterparts ([Bocchi et al., 2004](#); El Mansour & Mupinga, 2007; [Gibson, 2008](#); [Ponzurick et al., 2000](#)). Although such a difference was anticipated, this finding is important as it provides evidence that online learners either have fewer opportunities or less desire for social interaction compared to their on-campus counterparts. Given that online graduate business students are often returning to school while maintaining established work and family responsibilities, it is presumable that they enter the synchronous hybrid learning environment primarily focused on program completion and accordingly do not actively seek new social connections. This suggests that educators teaching in a synchronous hybrid learning environment should make a concerted effort to encourage online and on-campus students to form connections with their classmates.

The data also showed that perceived favorability of online instruction was significantly correlated with all three dimensions of need satisfaction for the online group. [Deci and Ryan's \(1985\)](#) SDT postulated that optimal motivation occurs when the social context provides students with opportunities to satisfy all of their basic psychological needs (see also Ryan & Deci, 2009); therefore, these findings may be useful to educational practitioners when designing a synchronous hybrid learning environment.

The second objective of this study was to explore how hybrid students' perceptions of need satisfaction relate to SDT-based motivation, and in turn success. The results indicated that need satisfaction was significantly correlated with the endpoints of the SDT continuum for both online and on-campus students; specifically, intrinsic motivation and amotivation. Multiple regression analysis also identified several significant sets of variables as well as individual factors that were predictive of motivation and perceived success. The basic needs scales together significantly predicted the endpoints of the SDT continuum for both on-campus and online students. The results also indicated that the endpoints of the SDT continuum had significant predictive effects on perceived success for both groups. The following discussion serves to place the contributions of this study in context of the literature as well as offer commentary on the study's strengths, limitations, and future research.

Implication for Technology-Enriched Learning Environments

The results of this study made several notable contributions to the existing literature. As a point of differentiation from the existing research on technology-enriched graduate business programs, this study used [Deci and Ryan's \(1985\)](#) SDT to guide the analyses and interpret the results. To date, SDT has been successfully applied in many areas, including work climate ([Deci et al., 2001](#)), employee-supervisor relations ([Ilardi et al., 1993](#); [Kasser, Davey, & Ryan, 1992](#)), personal relationships ([La Guardia, Ryan, Couchman, & Deci, 2000](#)), teacher burnout ([Fernet, Guay, Senécal, & Austin, 2012](#)), and traditional college classrooms ([Guay et al., 2008](#)). However, the application of SDT in synchronous hybrid graduate business programs in this study makes a unique contribution to the field of motivational research. The findings of this study confirm the tenability of SDT in synchronous hybrid graduate learning environments and support the use of [Ryan and Deci's \(2000b\)](#) SDT framework for future research on synchronous hybrid programs.

In regard to research on distance education, this study extends the literature on technology-enriched delivery modes in terms of its distinctive target population – students enrolled in synchronous hybrid graduate programs. The majority of previous studies have examined strictly online programs that lack a synchronous on-campus component ([Bocchi et al., 2004](#); [Chen & Jang, 2010](#); El Mansour & Mupinga, 2007; [Smith, 2001](#); [Terry, 2007](#)). A few other studies have investigated blended learning programs, which require all students to participate in both online and on-campus activities ([Chen & Jones, 2007](#); [Gibson, 2008](#)). Research on true synchronous hybrid programs, however, is very limited.

This research on synchronous hybrid learning makes a significant contribution by explicating how attendance mode affects motivational relationships in an emerging delivery mode at the postgraduate level. While it was surprising that few significant differences existed between online and on-campus students in terms of need satisfaction, motivation, and perceived success, this finding holds positive implications for the development and implementation of graduate distance education programs. Given that online and on-campus students were found to have very similar experiences, this study supports the use of the synchronous hybrid modality as a viable option for program delivery.

From a practical standpoint, this study also holds implications for learners, teachers, and instructional designers. In terms of learner integration, the results suggest that students should actively seek social connections with their peers, both online and on-campus. [Baumeister and Leary \(1995\)](#) noted that transient or superficial encounters do not provide adequate feelings of belongingness for optimal wellbeing. Therefore, students enrolled in synchronous hybrid programs should take responsibility to cultivate rich interpersonal relationships that contribute to satisfying their need for relatedness. Similarly, the findings of this study suggest that teachers need to develop effective strategies to support learner relatedness as well as foster their need for autonomy and competence. Previous research in technology-mediated learning environments has identified a number of instructional strategies that could be applied in synchronous hybrid learning environments to fulfill students' needs ([Chen & Jang, 2010](#)). Specifically, instructors can foster relatedness through peer interaction ([Kreijns, Kirschner, & Jochems, 2003](#)), autonomy through flexible learning options ([Willems, 2005](#)), and competence through assistance with course routines ([Beffa-Negrini, Cohen, & Miller, 2002](#)). Furthermore, the results of this study

validate the following two SDT-based support strategies that, if adapted, may prove to be particularly valuable in synchronous hybrid graduate business programs:

- 1) Educators should encourage interpersonal relationships between online and on-campus students that emphasize choice and flexibility rather than control and pressure (Reeve, 2002).
- 2) Course designers should create an open, interactive virtual learning space where students can meet outside of class to freely discuss their feelings, thoughts, and concerns ([Chen & Jang, 2010](#)).

In sum, the results of this study may help instructional designers make informed decisions about manipulating synchronous hybrid programs to improve need satisfaction as well as enhance motivation and learning for both online and on-campus students.

Strengths, Limitations, and Future Research

As more employers are winnowing out managerial-track candidates who lack the ability to work and communicate over the Internet, technology literacy is often a priority in graduate business programs ([Cooney & Hiris, 2003](#)). While these circumstances provide support for the study of synchronous hybrid delivery in this domain, many other disciplines also require a range of 21st-century skills that could be taught using synchronous hybrid delivery. In addition, even though the current sample only considered graduate business students, it is likely that motivation varies based on students' level of education. That is, undergraduates enrolled in synchronous hybrid programs might exhibit a unique motivational profile from students with postgraduate status. Future research on synchronous hybrid programs in other disciplines at various levels would help determine if course content and educational status affects the relationships among attendance mode, need satisfaction, motivation, and perceived success.

According to [Guay et al. \(2008\)](#), achievement is the standard indicator of student learning. This exploratory study, however, only used self-report data to measure students' success. Despite this limitation of using self-report data to assess students' perceived success, confidence in this outcome measure can be derived from previous studies that have found high correlations between perceived success and actual achievement among college students (e.g., $r = .53$, [Daniels et al., 2008](#); $r = .78$, [Hall, Perry, Chipperfield, Clifton, & Haynes, 2006](#); $r = .70$, [Ruthig, Haynes, Perry, & Chipperfield, 2007](#)). Still, in order to extend the current model beyond need satisfaction and motivation to more concrete learning outcomes, future research could introduce objective measures of success by obtaining students' summative grades assigned by their instructors.

Furthermore, the scale that was used to assess participants' perceived success does not distinguish between autonomy- and control-oriented learners. In particular, [Boiché, Sarrazin, Grouzet, Pelletier, and Chanal \(2008\)](#) identified a number of unique motivational profiles and linked outcomes with the differences between autonomous and controlled motivation. This distinction can be important in that students who are failing a course may still indicate that they are satisfied with the knowledge they are gaining in the classroom.

An additional methodological concern involves the high multicollinearity among the types of motivation as well as the basic needs. Warner (2013) noted that markedly high correlations among the independent variables make it difficult to determine their unique contributions to the observed relationships. The suppressive relationships reported in this study may, in part, be attributed to the high multicollinearity of the predictors. A similar concern regarding the possibility of type I errors includes the number of statistical tests needed to compare online and on-campus students in terms of need satisfaction, motivation, and perceived success. This investigation, however, conducted planned (a priori) comparisons involving motivational dimensions that have a strong theoretical foundation, and accordingly, the integrity of the results were not compromised due to high multicollinearity or inflated type I error rate (Tabachnick & Fidell, 2007).

While participants' responses were based on a multitude of synchronous hybrid courses taught by different instructors, this study did not attempt to examine faculty members' experiences in synchronous hybrid programs. Logically, many variations would be observed in instructors' attitudes and teaching styles as well as their level of proficiency with the technology required to facilitate a synchronous hybrid course. It would be pertinent for future studies to explore the role of faculty in this technology-enriched learning environment. Future research could collect qualitative data to gain a better understanding of faculty members' experiences in synchronous hybrid programs.

Lastly, a larger, more diverse sample would provide additional statistical power to identify meaningful effects. The results of multiple regression analysis in this study, for example, identified several large standardized beta coefficients that approached significance but may have been constrained due to the limited sample size. The measures that had lower reliability may also have led to a lack of significant findings. Further revision of the potentially problematic scale items may improve internal consistency and strengthen the ability of the instrument to detect significant effects. Future research on a larger sample with more reliable measures would also allow for the use of more rigorous quantitative data analysis techniques such as factorial analysis of variance and structural equation modeling.

Conclusion

New technology is constantly changing the enterprise of higher education. Compounded by the growing need for flexibility, innovations in course delivery options continue to gain momentum. For many postsecondary institutions, synchronous hybrid delivery provides an opportunity to increase enrollment without significant infrastructural changes. Despite the apparent benefits of synchronous hybrid delivery, prudent educators and researchers often question if technology-enriched learning environments can provide students with the necessary antecedents for optimal learning. To this end, many still agree with [Artino and Jones' \(2012\)](#) assertion that learning online is inherently different from learning F2F. To be sure, differences exist between online and on-campus students; however, these differences may not be as large or as problematic as some tend to believe. The results of this study suggest that aside from feelings of relatedness, online and on-campus students perceive synchronous hybrid programs in very similar ways.

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