The Relationship between Living Situation, In Person and Online Social Support and Academic Procrastination During the COVID-19 Pandemic

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Abstract

The social restrictions and the shift from face-to-face to an e-learning environment during the COVID-19 pandemic has been met with highly varying responses from higher education students. On the one hand students seem to be content with being home, on the other, the same population is perceived as one of the main at-risk groups for loneliness during the pandemic. In line with previous studies and theories, the present study aimed to examine whether the living situation (alone vs. with others) of the students influenced their perceived in person social support. Also, under investigation was whether living situation, in person and online social support influenced students' academic procrastination, one of the main problems in the highly autonomy-demanding e-learning environments. Using a cross-sectional retrospective design, the total sample was 84 students, consisting of 64 females, 21 males and one other (M_{age} = 21, SD_{age} = 2.9). In addition to the demographic questionnaire, participants were asked to fill out measures on academic procrastination (APS-S), in person social support (MSPSS) and online social support (OSSS). Results implied that living with others led to more perceived in person social support than living alone. Also, post-hoc analyses revealed that those living with roommates, parents, or a significant other, perceived different levels of in person social support, although all still higher than those living alone. Higher levels of in person social support was also predictive of lower levels of academic procrastination and vice versa. Lastly, a similar relationship was found between a subscale of online social support, instrumental support and academic procrastination. The practical implications and conclusions were that those students living alone are especially vulnerable to academic procrastination, likely due to them perceiving less in person social support. It was suggested that future research and interventions should apply the found relations, especially utilizing instrumental online social support, for helping this vulnerable group with academic procrastination.

Keywords: Social Learning Theory, Academic Procrastination, In person social support, Online social support, Instrumental support, COVID-19 pandemic, University students, E-learning

Preface

The present bachelor thesis is a culmination of an interest in humans and the personal discovery of psychology, which started approximately six years ago, and has now become, with anticipation, a hopefully long-lasting career. The journey thus far has brought me from Finland to the Netherlands, to getting to know a whole new culture and friends, becoming an almost-independent adult, and to finding my fascination in educational psychology of which I wish to pursue further in the future.

The inspiration for the current work came from not only my personal strengths and struggles with self-regulation, but also from my personal situation of living on my own during the pandemic, as well as from observations of first year students in my part-time job as a student mentor at the University of Twente.

My sincerest thanks go to my supervisor Dr Alieke van Dijk for the helpful discussions and advice on the topic, writing thesis and research, but also for the various hints and nudges towards improving the thesis (for instance conciseness-wise). Similarly, great thanks to my second supervisor Dr Tessa Eysink for her very direct, but constructive feedback. I would also like to thank my parents, Linnin Höyhtyä and Pasi Liimatta; without their support I would not even have been able to have come here, nor to stay and complete my degree. Finally, I would like to thank my friends Seth Ruiter, Ronja Kreiter, Theresa Eveslage, Bart van der Vaart, Lisa Graßmann, Masir Achat, Arttu Pahkin, Benjamin Hollmérus, Kasperi Reijonen, Matias Tuomi and Ville Raijas for their various support, help and advice.

The Relationship between Living Situation, In Person and Online Social Support and Academic Procrastination During the COVID-19 Pandemic

As of the beginning of the COVID-19 pandemic, the social restrictions brought by the lockdown-response forced the educational system move from largely face-to-face to solely an e-learning environment, and in turn the students to learn from home. This change was met with largely varying responses from higher education students. The positive responses to this social environment change ranged from no change in reported meaningful social interactions, decreasing levels of loneliness (Fried, 2020), to preferring e-learning due to comfortable surroundings, the ability to stay at home, and the possibility to study at one's own pace (Baczek et al., 2021). Simultaneously however, students were found to be even more at risk for loneliness than before (Bu et al., 2020). Indeed, social isolation was reported as one of the main disadvantages and challenges of the e-learning environment prior to (Rasheed et al., 2020) and during the pandemic (Baczek et al., 2021). Previous studies hypothesize that this difference in reports of loneliness is likely partly due to the living situation, which is said to give more opportunities for "potentially more meaningful … social interactions" (Fried, 2020, p. 12). This closely resembles the definition of social support, "the social resources that persons perceive to be available or that are actually provided to them by nonprofessional's in the context of both formal support groups and informal helping relationships" (Gottlieb & Bergen, 2010, p. 512). Therefore, this availability of social support could be thought related to the living situation (e.g., living with others, versus living alone, would lead to receiving more social support). As Rasheed et al., (2020) notes, this loneliness and isolation lays serious challenges to the academic lives of these students.

In addition, research indicates that online students face challenges with self-discipline (Baczek et al., 2021), autonomy and self-regulation (del Arco et al., 2021), all of which have been found related to procrastination (Hong et al., 2021; Rasheed et al., 2020; Steel & Klingsieck, 2016). Procrastination has been found to be one of the main issues of the e-learning environment due to the high level of autonomy and flexibility required from online students (Rasheed et al., 2020). This is likely why time-management skills are so crucial for these students (Broadbent, 2017; Broadbent & Poon, 2015; Hong et al., 2021; Michinov et al., 2011). However, as the definition of procrastination entails, procrastination is not accidental, it is purposeful. Klingsieck (2013) defines it as "the voluntary delay of an intended and necessary

and/or [personally] important activity, despite expecting potential negative consequences that outweigh the positive consequences of the delay" (Klingsieck, 2013, p. 26). Likewise, academic procrastination is defined as the purposeful postponement of necessary academic work (Schraw et al., 2007). This failure of self-regulation, as Steel (2007) describes it, can have severe consequences to the academic life of students. Studies on the impact of academic procrastination show that it is not only negatively associated to academic performance but also to academic life satisfaction (Balkis & Erdinç, 2017; Yang et al., 2020).

Fortunately, research suggests that social support may aid those who are unable to regulate their learning behaviour (Bandura, 1977; Michinov et al., 2011; Sari & Fakhruddiana, 2019). For instance, one study found a negative correlation between social support and academic procrastination, where students in completing their thesis procrastinated less the more social support they received and vice versa (Sari & Fakhruddiana, 2019). For online students however, studies indicate that receival of social support and identification of peers is more difficult for instance due to transactional distance and lack of facial communication cues (Broadbent, 2017; Kang, 2007; Rasheed et al., 2020). Furthermore, the study of Nick et al. (2018) shows that the supportive effect of online social support is weaker than of its in person counterpart. It is unknown whether this supportive effect of online social support extends to academic procrastination similarly to in person social support.

Correspondingly, the current study aimed to investigate whether during the pandemic students' academic procrastination tendencies differ depending on their living situation and perceived in person and online social support.

Theoretical Framework

Academic Procrastination, a Self-Regulatory Failure

Research implies that the Temporal Motivation Theory is the best for explaining why procrastination is considered a self-regulatory failure (Siaputra, 2010; Steel, 2007). The theory is centred on a specific formula consisting of four variables, based on which the individual chooses the action leading to the greatest utility (Siaputra, 2010). These four variables are expectancy, value, sensitivity to delay and the delay itself (Steel, 2007).

Firstly, expectancy or self-efficacy is the belief that one is able to reach one's goals using their own abilities (Bandura, 2001). However, in addition to learning self-efficacy, online

students require technological self-efficacy due to the technology-mediated learning environment (Rasheed et al., 2020), although this is not supported by all studies (del Arco et al., 2021). This relation is well explained by the study of Hong et al., (2021). It was found that those students with better self-regulation strategies for the online learning environment (e.g., time management, environmental structuring, and help-seeking) felt more capable (self-efficacious) about their own learning, and in turn procrastinated less. The opposite was the case for those with weak self-regulation strategies and low self-efficacy.

Secondly, the perceived value of the task is crucial; the task should be viewed as relevant and valuable (Hussain & Sultan, 2010; Steel, 2007). If the student does not find the task attractive, they may be more inclined to do something more rewarding in the short-term, despite the longer-term consequences (Klingsieck, 2013; Michinov et al., 2011; Schraw et al., 2007; Steel, 2007). Additionally, although the task should be doable (Hussain & Sultan, 2010), it should also be challenging enough for the individual, which is especially important for those high in need for achievement (Bandura, 1977; Steel, 2007). Considering the increased challenges brought by technology in the online learning environment (Rasheed et al., 2020), it could be thought that, for instance, some students may find there to be too many difficulties, thus leading to task aversiveness and procrastination.

Thirdly, the sensitivity to delay of the individual (which is also considered to be represented by the personality trait conscientiousness) is crucial for whether a student will procrastinate or not (Roberts et al., 2014; Siaputra, 2010; Steel, 2007; Steel & Klingsieck, 2016). Students low in this trait (i.e., the facets impulsiveness, distractibility, and lack of self-discipline) and high in their proneness to boredom are likely to have low self-regulative skills and thus are prone to procrastinate (Costa & McCrae, 1992; Steel, 2007). Therefore, as students were forced to study in the home environment, those more susceptible to be distracted or bored may have a harder time to focus than usual. In turn, students high in their ability of environmental structuring or self-regulation are less likely to procrastinate due to fewer distractions (Zimmerman, 2000), which has also been found during the pandemic (Hong et al., 2021).

Lastly, the delay or the intention-action gap can itself be considered as procrastination behaviour (Steel, 2007). Unsurprisingly then, those who are high in organization skills, time-management skills, or conscientiousness are less likely to procrastinate and thus to experience

such a delay (Broadbent & Poon, 2015; Hong et al., 2021; Michinov et al., 2011; Steel, 2007). This phenomenon is also prevalent in the academic online setting, where high procrastinators highly delay the start of studying, while in turn low procrastinators begin in the first few weeks of the online course (Michinov et al., 2011).

Research indicates that high procrastinators are likely to face various negative consequences to their academic lives due to their procrastination tendencies (Balkis & Erdinç, 2017; Hussain & Sultan, 2010; Yang et al., 2020). This behaviour can result to low achievements, fear of examinations (leading to related depression and anxiety) and even to the formation of an inferiority complex (Hussain & Sultan, 2010). Furthermore, because they cannot manage their studies, they can start to balance their academic problems with academic cheating, aggressive behaviour, and even drug addiction, which may lead to further academic problems or quitting.

In summary, students with internal capabilities to manage their learning and the technology involved in the e-environment are able to manage their studies, while others, for instance those low in self-regulatory behaviours, conscientiousness, or self-efficacy are unable to succeed on their own, and thus procrastinate and struggle academically.

Social Support, Online Social Support, and Their Roles in the Self-Regulation of Academic Learning

The social learning theory of Bandura (1977) can be used as assistance for explaining both the protective factor of social support and the ineffectiveness of online social support. Similarly to the temporal motivation theory of self-regulation and procrastination (Steel, 2007), the social learning theory of Bandura states that human behaviour is largely motivated by anticipated consequences or goals. These consequences are either learned from our own behaviours or vicariously through others (modelling). Peer learning and help-seeking is significantly more common in blended learning in comparison to strictly online e-learning environments (Broadbent, 2017), which is likely due to online social support being more difficult to acquire for online students (Rasheed et al., 2020). As Kang (2007) notes, disembodiment is the main contributing factor for the low supportive effect of online social support. This disembodiment likely comes from the various challenges online students face, ranging from the geographical and time zone differences, varying time commitments between students (Broadbent, 2017; Rasheed et al., 2020), lack of confidence and trust of peers, lack of communication cues and technological

difficulties (Rasheed et al., 2020). Moreover, due to these challenges with peer acquirement, students may not even use some of the support available. This may be reflected in the study of Michinov et al. (2011), where high procrastinators wrote less on online discussion forums resulting in poor academic performance. In turn, low procrastinators, with high forum participation and thus high peer interaction, had the opposite, positive effect on performance.

The social learning theory also highlights the importance of self-efficacy. The learning process requires perseverance from the learner (Wang et al., 1990), however, the key factor to motivation is the self-efficacy of the learner (Bandura, 1977). This self-efficacy can be increased for instance by extrinsic encouragement, such as social support from others. This may relate to the found negative relation between social support and academic procrastination (Sari & Fakhruddiana, 2019). Nevertheless, social support is not always necessary for motivation acquisition. The behaviour or the learning process itself can also be intrinsically reinforcing or motivating for the performer (Bandura, 1977), which may refer to for instance why achievement-oriented individuals enjoy challenging tasks (Steel, 2007).

Finally, social support is crucial for the development of self-regulative competence (Zimmerman, 2000). The learning process requires a constant focus on goals via self-regulation, self-evaluation, and self-correction. However, for those low in intrinsic self-regulative (or metacognitive) skills, the learning process may be difficult and result in reactive self-regulative (e.g., procrastination) behaviour (Veenman, 2015; Zimmerman, 2000). Following the social-cognitive perspective, Zimmerman (2000) states that social support may assist in not only informing about the action through modelling but also support them throughout skill acquirement. Eventually with practice, the skill may become self-regulative and autonomous.

In summary, the social learning theory implies that effective social support (for instance from peers) can help students to not only learn what to do or not to do, but also to motivate those lacking in self-efficacy or interest, as well as to help them learn self-regulation skills.

Current Study

The current study aimed to investigate whether students vary with regards to their extent of academic procrastination during the COVID-19 pandemic based on their extent of perceived social support (in person and online). Furthermore, the living situation of students was expected

to influence the extent of perceived in person social support and independently affect students' academic procrastination tendencies. As such the following hypotheses were formulated:

- During the COVID-19 pandemic, students living with others (e.g., roommates, significant other, or parents) perceive higher levels of in person social support than students living alone.
- During the COVID-19 pandemic, students living with others (e.g., roommates, significant other, parents) academically procrastinate less than students living alone.
- During the COVID-19 pandemic, students who experience higher levels of in person social support experience lower levels of academic procrastination.
- During the COVID-19 pandemic, students who experience higher levels of online social support experience lower levels of academic procrastination.

Methods

Participants

The sample consisted of 86 students, formed of 64 females, 21 males and one individual reporting as other (M_{age} = 21, SD_{age} = 2.9). Further, of the participants 58 (67.4%) were German, 15 (17.4%) were Dutch, and 13 (15.1%) were from other countries. They comprised of solely bachelor students, specifically 35 (40.7%) first year bachelor, 22 (25.6%) second year bachelor and 29 (33.7%) third year bachelor students.

The participants were between 18 to 25 years old, higher education students, from either strictly online (n = 61; 70.9%) or blended learning environments (n = 25; 29.1%). When consenting to the study, they indicated to have sufficient English skills/knowledge. All participants were provided with brief information on the study as well as the confidentiality, anonymity and the possibility for withdrawal at any point during the study. Without consenting, the participants were not allowed to move forward to complete the study. All participants filled out the complete questionnaire.

Design

A cross-sectional retrospective survey design was used to acquire the participants' perceived levels of social support (in person and online), the tendencies to academically procrastinate, and the current living situation during the COVID-19 pandemic.

Materials

The Academic Procrastination Scale – Short Form (APS-S)

To measure the total academic procrastination tendencies of the participants, the validated Academic Procrastination Scale-Short Form (APS-S) was used. The APS-S is a short five-item measure (Yockey, 2016), which was adapted from the item scale of McCloskey (2011). The scale consisted of items, such as 'I put off project until the last minute' and 'I get distracted by other, more fun, things when I am supposed to work on schoolwork'. Each item was measured on a 5-point Likert scale of 1 = Strongly Disagree to 5 = Strongly Agree. Similarly to the original APS (McCloskey, 2011), the total summed scores for the APS-S were calculated to receive the academic procrastination scores per participant.

As the current study was interested in the tendency to procrastinate during the COVID-19 pandemic, this context was added via a sentence, 'Please answer the following items based on how you felt during the COVID-19 pandemic' (See Appendix A for the adapted APS-S). The ASP-S obtained a Cronbach's alpha of .89.

The Online Social Support Scale (OSSS)

To measure online social support, an adapted version of the Online Social Support Scale (OSSS) was used. The OSSS (Nick et al., 2018) is a validated measure of online social support including the four primary subtypes of social support (esteem/emotional support, social companionship, informational support and instrumental support). For the participants, it was specified that only the online social support perceived 'during the COVID-19 pandemic' was to be reported (See Appendix B for the modified OSSS). For the current study, a Cronbach's alpha of .96 was achieved for the OSSS.

Similarly to Nick et al. (2018), the present OSSS was preceded with a time spent online (TSO) measure. The purpose of the TSO was to orient the participants (for the OSSS) towards the online social platforms they used for communication purposes (e.g., talking, posting, commenting, liking, messaging and gaming), not those used for anything other (i.e., non-social behaviours such as scrolling, watching, reading, or looking at content). Participants were asked to rate each applicable platform based on how often they use each on a 5-point Likert scale of 0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Pretty Often, 4 = A Lot. The options were (1) 'text/photo/video sharing sites' (e.g., Facebook, Instagram, TikTok); (2) text communication

sites (e.g., Texting, Email, WhatsApp); (3) forums (e.g., Reddit, 4chan), (4) dating apps/sites (e.g., Tinder, Bumble, happn), (5) online games (e.g., Call of Duty, World of Warcraft, FIFA) and (6) 'If you interact with people using other sites, apps, services, or games, please rate how often you use them generally'.

The OSSS itself measured how often participants, while interacting with others online, have experienced the four primary subtypes of social support via 40 items. Esteem/emotional online social support was measured via 10 items (items 1-10), such as 'People show that they care about me online'. Social companionship online social support was measured via 10 items (items 11-20), such as 'When I'm online, I talk or do things with other people'. Informational online social support is measured via 10 items (items 21-30) such as 'When I'm online, people give me useful advice'. Lastly, instrumental online social support was measured via 10 items (items 31-40) such as 'People online would help me with money or other things if I needed it'. All these items were measured via a 5-point Likert scale of 0 = Never, 1 = Rarely, 2 = Sometimes, 3 = Pretty Often, 4 = A Lot. To receive the scores for online social support per subscale, the corresponding items were summed. Likewise, to receive the total online social support, all items were summed.

The Multidimensional Scale of Perceived Social Support (MSPSS)

An adapted version of the validated Multidimensional Scale of Perceived Social Support (MSPSS) of Zimet et al. (1988) was used to measure the perceived social support. To distinguish from online social support, the MSPSS was designated to only measure in person social support (See Appendix C for the adapted MSPSS). Also, it was specified that only social support during COVID-19 was of interest. This short 12-item measure consisted of three different sources of social support measured using four items each: Family (e.g., 'My family really tries to help me'), Friends (e.g., 'I can count on my friends when things go wrong'), and Significant other (e.g., 'There is a special person who is around when I am in need'). Each item was rated on a 7-point Likert scale where 1 = very strongly disagree, and 7 = very strongly agree. The Cronbach's alpha of .92 was acquired. For analysis, the current study was only interested in the total in person social support. Thus, as instructed by Zimet et al. (1988), only the mean of all items was computed (not the subscales).

Procedure

A brief description and link to the study on the SONA platform was distributed to potential participants through social media (e.g., WhatsApp groups) and SONA. The questionnaire was open for 20 days. Having read the study description and consented to participation, the participants were given the demographic questionnaire registering gender, age, study level and living situation (i.e., alone, with roommates, parents, significant other, or other). Living situation was later transformed into a dichotomous dummy variable consisting of two categories, 'Alone' = 0 and 'With others' = 1 (i.e., roommates, significant other, family, other). The demographic questionnaire was first followed by the Academic Procrastination Scale-Short Form, then the Online Social Support Scale and lastly the Multidimensional Scale of Perceived Social Support. After completing all questionnaires, the participants were thanked for participation and shown the contact information of the researcher again.

Results

First, a descriptive analysis was performed per scale by the dummy living situation (see Table 1). The histogram of in person social support by dummy living situation and its category living with others showed slight skewness to the left (The histograms of in person social support by dummy living situation can be found as Figure A1 in Appendix D). Together with the mean, this hinted that those living with others may be receiving on average more in person social support. Similar or other skewness was not apparent in the other variables.

To investigate this further, post-hoc descriptive analyses were conducted with each of the five separate living situations (alone, with roommates, significant other, parents, or the category other) and the three dependent variables (Table 2). As can be seen in Figure 1, the different categories within the living with others group varied in their mean levels of in person social support. However, they also varied largely with their sample size (For instance, 39 reported to live with roommates, while only five with a significant other and one in 'other').

Next, the hypotheses of the present study were examined. First, it was investigated whether students' living situation during COVID-19, namely living with others, led to perceiving more in person social support than those living alone. In accordance, a one-way between subject analysis of variance (ANOVA) was performed to investigate whether there is a significant difference between belonging to either of the groups in relation to in person social support. In addition, a

Table 1

Means and Standard Deviations of Academic Procrastination, In Person, and Online Social Support by the Dummy Variable Living Situation

Variable	Living alone (n = 10)		Living with others (n = 76)		Total (N = 86)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Academic procrastination (max 25)	16.6	6.1	14.9	4.7	15.1	4.9
Online Social support (max 160)	62.2	23.0	72.0	24.7	70.9	24.6
In person social support (max 84)	59.6	17.0	69.1	10.1	67.9	11.4

simple linear regression was run with the dummy variable living situation by in person social support, to see if living situation predicted changes in the levels of in person social support. A significant difference was found between being in either of the two groups in relation to in person social support (F[1, 84] = 6.355, p = .014), with an R squared of .07. Also, as indicated by Table 3, the linear regression analysis revealed living situation to be a significant predictor of in person social support, where those living with others received more in person social support than those living alone during COVID-19, supporting the hypothesis.

Table 2

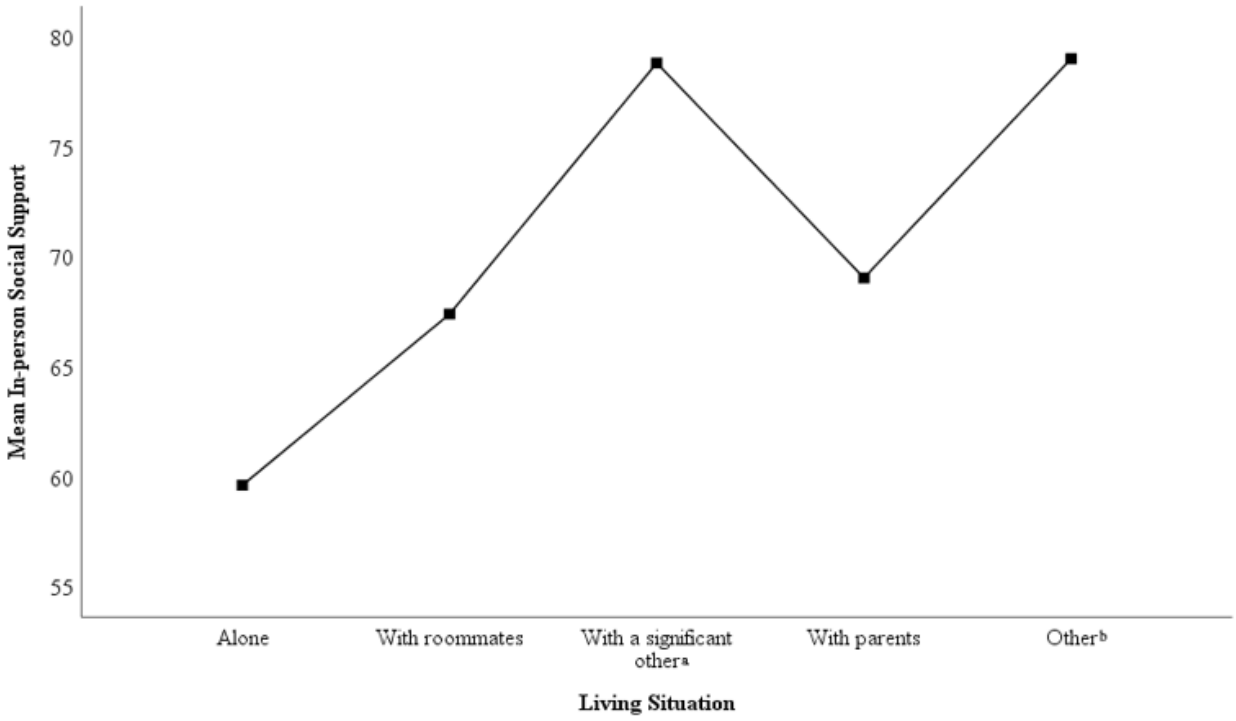
Means and Standard Deviations of Academic Procrastination, In Person, and Online Social Support by Living Situation

Variable	Alone (n = 10)		Roommates (n = 39)		Significant other (n = 5)		Parents (n = 31)		Other (n = 1)		Total (N = 86)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Academic procrastination (max 25)	16.6	6.1	15.3	4.5	14.6	6.8	14.5	4.8	18.0	-	15.1	4.9
Online Social support (max 160)	62.2	23.0	69.9	25.4	68.6	14.0	74.6	25.4	96.0	-	70.9	24.6
In person social support (max 84)	59.6	17.0	67.4	9.1	78.8	4.8	69.0	11.1	79.0	-	67.9	11.4

To investigate this further, a post-hoc ANOVA and a simple linear regression was conducted with the five-category living situation as predictor of in-person social support. The tests found both a significant difference between belonging to each of the five groups in relation to the dependent variable; also, a significant regression equation (with a beta of .224) was identified (F[1, 84] = 4.458, p = .038), with an R^2 of .05. This is clearly visible in Figure 1, where those alone can be seen to be perceiving the least in person social support, while others (e.g., with roommates or parents), especially those living with a significant other or in the group ‘other’ seem to be perceiving the most. As such, the inspected hypothesis can be expanded upon by

Figure 1

Mean In Person Social Support by Living Situation



Note. $N = 84$.

[a] Group 'significant other' had a small sample size, $n = 5$. [b] Similarly, group 'other' $n = 1$.

noting that it also matters with whom the student lives in relation to the perceived in person social support.

Second, it was inspected if, during COVID-19, students living with others in comparison to alone report less academic procrastination. A simple linear regression analysis (Table 3) and a one-way between subjects ANOVA were performed with the dummy variable living situation as predictor of academic procrastination. A non-significant difference between living situations in relation to academic procrastination was observed from the ANOVA ($F[1, 84] = 1.034$, $p = .312$) with an R^2 of .012. The regression analysis (Table 3) showed a nonsignificant relation between the variables, indicating that living situation was not a predictor of academic procrastination during COVID-19, and thus the hypothesis was rejected.

Table 3

Results of Simple Linear Regression Analyses of In Person Social Support and Academic Procrastination by Dummy Living Situation

Variable	*B*	*SE B*	β	*t*	*p*
			Living situation [a]		
Constant	59.60	3.49	-	17.07	.001
In person social support	9.36	3.71	.265	2.52	.014
Constant	16.60	1.54	-	10.78	.001
Academic procrastination	-1.67	1.64	-.110	-1.02	.312

Note. $N = 86$. Upon examination was whether living situation predicted first in person social support and second academic procrastination.

[a] Living situation was a dummy variable with conditions living alone (coded = 0; $n = 10$) and living with others (coded = 1; $n = 76$).

Similarly to previous hypothesis, a post-hoc ANOVA and simple linear regression were performed with the five-category living situation as predictor of academic procrastination. However, no significant relation or difference between the groups was observed ($F[4, 81] = .477$, $p = .753$), reinforcing the rejection of the hypothesis.

Third, it was investigated whether students perceiving more in person social support experienced less academic procrastination during COVID-19. As the variables used different scales, to allow analysis, the scores for both variables were transformed into z-scores (Salkind, 2010). Accordingly, a simple linear regression analysis was run with in person social support as a predictor of academic procrastination. As Table 4 demonstrated, in person social support was a significant predictor of academic procrastination $F(1, 84) = 8.342$, $p = .005$, with an R^2 of .090. Therefore, supporting the hypothesis, it appeared that the more in person social support students received, the less they academically procrastinated.

Table 4

Results of Simple Linear Regression Analyses Academic Procrastination by In Person Social Support and Online Social Support

Variable	*B*	SE	β	*t*	*p*
		In person social support [a]			
Constant	-2.94	.103	-	.001	1.00
Academic procrastination	-.30	.104	.301	-2.89	.005
		Online social support [a]			
Constant	-5.08	.106	-	.001	1.00
Academic procrastination	-.196	.107	-.196	-1.833	.070

Note. $N = 86$. Under investigation was whether academic procrastination was separately predicted by first in person social support and second by online social support.

[a] Due to different scales of measurement, both analyses were performed using z-scores.

Finally, it was examined whether receiving higher levels of online social support would correspond to students receiving lower levels of academic procrastination. Similarly to the previous hypothesis, the scales were transformed to z-scores before analysis (Salkind, 2010). A simple linear regression analysis was conducted with online social support as a predictor of academic procrastination. As observable in Table 4, a non-significant regression equation was identified $F(1, 84) = 3.358$, $p = .070$, with an explained variance of 3.8 per cent. Consequently, total online social support did not predict a significant change in academic procrastination, leading the hypothesis to be initially rejected.

However, to further investigate the relation of online social support and academic procrastination, post-hoc descriptive analyses were conducted per online social support subscale. Furthermore, similarly to the previous hypothesis, simple linear regression analyses were conducted with the standardized academic procrastination scale by the standardized subscales of

online social support. The descriptives were as follows, the esteem/emotional online social support (M = 19.6, SD = 7.2), the social companionship (M = 20.3, SD = 8.1), the informational support (M = 19.8, SD = 7.0), and instrumental support (M = 11.2, SD = 6.8). Non-significant relations were observed for the first three scales, the esteem/emotional online social support $F(1, 84) = 1.631$, $p = .203$, the social companionship online social support $F(1, 84) = .769$, $p = .383$, and the informational online social support $F(1, 84) = 2.644$, $p = .108$. A significant regression equation was discovered between instrumental online social support and academic procrastination $F(1, 84) = 6.617$, $p = .012$, with an R^2 of .073. This indicated that, although total online social support was not significantly related to academic procrastination, its subscale instrumental online social support was. In other words, the more instrumental online social support (beta of -.27) the students received, the less they procrastinated. Thus, the hypothesis is partially confirmed.

Discussion

The current study aimed to investigate whether the living situation of higher education students contributes to their perceived in person social support but also to their academic procrastination during the COVID-19 pandemic. Similarly, it was also of interest to investigate whether in person social support and online social support have an effect on their academic procrastination tendencies.

In line with the results, the research question can be answered. As the living situation explained a significant but small amount of the variance in social support, it seems that the social home environment of students is a small but relevant source of support for students during the pandemic. However, as a non-significant regression equation was found between living situation and academic procrastination, it seems that the living situation does not directly influence academic procrastination tendencies as was expected. Still, considering that in person social support was found to be predictive of academic procrastination, it seems that an indirect relationship may exist from living situation to academic procrastination through in person social support. Finally, although total online social support does not predict academic procrastination tendencies, its subscale, instrumental social support can (further defined and discussed below).

Taking a closer look at the first hypothesis, as supported by the current and previous studies (Baczek et al., 2021; Eggens et al., 2008; Fried, 2020), the living situation (alone versus with

others) contributes to in person social support. Present post-hoc analyses show that more specifically living with roommates, a significant other or parents is also relevant in relation to receival of in person social support. This is also supported by previous research (Baczek et al., 2021; Eggens et al., 2008; Fried, 2020; Gottlieb & Bergen, 2010). These results may reveal how studies during the pandemic have found students to prefer the home environment (Baczek et al., 2021; Fried, 2020), possibly, as Fried hypothesized, due to the higher opportunities for meaningful support. Indeed, Gottlieb and Bergen (2010) indicate that not only are the sources of support important but also its quality. This quality then depends for instance on the closeness of the relationships between the support giver and receiver, which seems to be supported by the present study (e.g., students living with significant others, in supposedly closer relationships, had overall higher mean social support than those living with parents). However, not all studies agree with all sources of support to be equal, or even effective in their supportive effect. For instance, Eggens et al. (2008) identify significant others' support as a valuable source of support, while support from peers and parents was not found significant for academic performance. The present study adds upon this research by indicating that during the COVID-19 pandemic, living with others (especially with parents or significant other) is associated with higher levels of perceived in person social support.

Next, living situation was not found related to changes in the procrastination tendencies during the COVID-19 pandemic, and thus this hypothesis was rejected. This finding seems to be in line with previous research (Ferrari et al., 1998). Although the present research and the study of Ferrari et al. (1998) investigated different variables in relation to procrastination, the present study's living situation could be considered a part of the social support network examined by Ferrari. Similarly to the current study, they found no significant relations between the size of the social support network and procrastination. The present results could then be interpreted as an extension of these results, where both living situation and simply the size of the social support network are not related to changes in procrastination tendencies. However, Ferrari and colleagues found independent negative correlations with the depth of the relationship of the participant with their father and best friend of same sex with procrastination. Furthermore, they found independent positive correlations with conflict between the participant's mother, father and best friend of the same sex with procrastination. Accordingly, it is suggested that, similarly to Ferrari et al. (1998) and Eggens et al. (2008), future research would investigate whether

different or similar findings would be observed if the focus would be on the quality of the relations and academic procrastination instead of simply the living situation.

Subsequently, it was investigated whether more perceived in person social support led to less academic procrastination reported by students. Most previous research and theories support this (Bandura, 1977; Michinov et al., 2011; Sari & Fakhruddiana, 2019); although Eggens et al. (2008) implies that social support does not have a direct effect on study attainment (not academic procrastination per se). Nonetheless, consistent with the present study, Sari and Fakhruddiana (2019) found a negative correlation between social support and procrastination in completion of thesis. They elaborate that social support functions as a motivator for students. Students informed that the social support helped them to deal with stress, and many stated that without the support they would not feel able to finish their thesis. This is in line with the social learning theory (Bandura, 2001) as well as previous research indicating social support to be a protective factor for stress (Eggens et al., 2008) and even COVID-19 related stress (Bourion-Bédès et al., 2021). As suggested by Bandura (2001), people may aid others by providing resources (e.g., social support), which may be used, for instance, to reduce burdens or responsibilities, and in turn lower stress. In other words, it could be that the effect of social support on academic procrastination is mediated through stress coping (the more social support, the less stress, and thus less academic procrastination). Future research should investigate this further to explain the present low associations.

Lastly, it was examined whether receiving more online social support contributes to less experienced academic procrastination. The non-significant total online social support and the significant relation with the subscale, instrumental online social support, hints that simply receiving social support online is not influential for academic procrastination. Instead, the type of online social support one receives is important, which is similar to the conclusions of Eggens et al. (2008) on in person social support. Nick et al. (2018) defines instrumental social support as "provision of financial aid, material resources, and needed services; it includes offering help in getting necessary tasks done, providing something of use, performing a task, or taking on a responsibility" (p.3). Thus, it seems that for academic procrastination, online social support that is influential directly to the task is relevant.

This may reflect the challenges of online social support, namely, the disembodiment effect of the online learning environment (Broadbent, 2017; Kang, 2007; Rasheed et al., 2020). Indeed, this would seem to be supported by the non-significant relations with the other online social support subscales as each, based on their definitions (see Table A1 in Appendix E for the definitions of each subscale from Nick et al., 2018), seems to match the challenges of the online learning environment. The subscales esteem/emotional support, social companionship and informational online social support all appear similar to the challenges that students face, namely, the transactional and geographical distance, alienation, lack of communication cues, and difficulties with identifying and trusting peers. Indeed, following the categorization of the challenges of the e-learning environment of Rasheed et al. (2020), this seems to fit. While all above subscales seem to belong to students' isolation challenges, procrastination is its own category, under self-regulation challenges. Finally, the effectiveness of instrumental support may be explained through proxy agency (Bandura, 2001), where the direct help, provided online, assists to lessen the responsibilities of the students (e.g., through financial support lessening stress about money). Thus, it may be that online social support acts similarly through stress coping, as was suggested for its in person counterpart. However, to affirm this, future research should be conducted. This research should especially focus on the connections between the instrumental online social support, and the other three online social support subscales (Nick et al., 2018), the challenges of the online learning environment (e.g., Rasheed et al., 2020) and the disembodiment effect (e.g., Kang, 2007).

Practical Implications

The present study provides essential information on the well-being of students in the e-learning environment during the COVID-19 pandemic. Those living alone seem to be vulnerable for academic procrastination because they perceive lower levels of in person social support (since, the lower in person social support they perceive, the more they academically procrastinate). Similarly, present study adds upon research on the differences between the sources of support. Although living situation was not explicitly treated as a source of support, present results imply that it is a significant part of the support network of students. Finally, the current study seems to expand on the research on the effects of the disembodiment effect of online social support. It is implied that only a specific type of online social support (i.e., instrumental social support) seems to be influential for tackling procrastination in the e-learning

environment and that it likely functions through stress coping similarly to in person social support. These findings not only shed more light into the workings of online social support but can also be used in practice, for instance, for helping these students with academic procrastination. Accordingly, it is suggested that researchers and institutions would evaluate existing interventions or design new ones for that purpose; and focus on especially those students low in self-regulation, living alone, or low in perceived in person social support or instrumental online social support.

Limitations

The present study has some limitations. Firstly, as Brysbaert (2019) critiques, conclusions with underpowered studies (with small sample sizes) can provide a variety of results due to a larger possibility for error, leading to for example more false positives. Thus, it is uncertain how results would be influenced with an appropriate sample size in both the living situation category ‘alone’ but also in the separate living situations of ‘living with others’, namely, with a significant other. Secondly, it is unknown what the living situation group ‘other’ relates to (although the present study only had one participant report as it). To allow clearer analysis and reporting, future studies should include inclusive and exhaustive categories.

Subsequently, it would be highly beneficial to replicate the current study with appropriate sample sizes as well as inclusive and exhaustive living situation categories. This would reinforce the present findings, but could also lead to differential findings, for instance with regards the rejected hypothesis on the direct relationship between living situation and academic procrastination.

Conclusion

The present study highlights the vulnerability of higher education students during the COVID-19 pandemic but also in general in the e-learning environment. It shows that those students living alone are especially vulnerable to academic procrastination tendencies, which in itself has been found to have serious negative consequences on the academic lives and achievement of students (Balkis & Erdinç, 2017; Hussain & Sultan, 2010; Yang et al., 2020). Furthermore, the present findings on instrumental online social support and academic procrastination, as well as the suggested explanations with the online social support subscales and the challenges of the e-learning environment, imply that online social support can be used

for supporting online students. With these findings in mind, it is not only possible to identify but also help the most vulnerable groups struggling with academic procrastination.

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Appendices

Appendix A

Academic Procrastination Scale – Short Form (APS-S)

Please answer the following items based on how you felt **during the COVID-19 pandemic**:

1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree					
1. I put off projects until the last minute.	1	2	3	4	5
2. I know I should work on schoolwork, but I just don't do it.	1	2	3	4	5
3. I get distracted by one other, more fun, things, when I am supposed to work on schoolwork.	1	2	3	4	5
4. When given an assignment, I usually put it away and forget about it until it is almost due.	1	2	3	4	5
5. I frequently find myself putting important deadlines off.	1	2	3	4	5

Appendix B

The Online Social Support Scale (OSSS)

Most sites, apps, services, and games on the Internet can be used in lots of different ways and for different purposes. We're interested in how much you use these online spaces to **connect or interact with other people**.

- This means we **are** interested in how much you use these online spaces to talk with people, post, comment, like, send messages, game with others, etc.
- This means we are **not** interested in how much you use these online spaces to scroll through other people's posts, watch or read content, or just look up information.

How much do you use the following sites, apps, services, or games to **connect or interact with other people**?

0 = Never 1 = Rarely 2 = Sometimes 3 = Pretty Often 4 = A lot					
Text/photo/video sharing sites (e.g., Facebook, Instagram, TikTok)	0	1	2	3	4
Text communication sites (e.g., Texting, Email, WhatsApp)	0	1	2	3	4
Forums (e.g., Reddit, 4chan)	0	1	2	3	4
Dating apps/sites (e.g., Tinder, Bumble, Match.com)	0	1	2	3	4
Online games (e.g., Call of Duty, World of Warcraft, FIFA)	0	1	2	3	4
If you interact with people using other sites, apps, services, or games, please rate how often you use them generally:	0	1	2	3	4

Now, think about the online spaces you use above. Rate **how often** the following things have happened for you **while you interacted with others** online **during the COVID-19 pandemic**. Use the following scale:

0 = Never 1 = Rarely 2 = Sometimes 3 = Pretty Often 4 = A lot					
1. People show that they care about me online.	0	1	2	3	4
2. Online, people say or do things that make me feel good about myself.	0	1	2	3	4
3. People encourage me when I'm online.	0	1	2	3	4
4. People pay attention to me online.	0	1	2	3	4

0 = Never 1 = Rarely 2 = Sometimes 3 = Pretty Often 4 = A lot					
5. I get likes, favourites, upvotes, views, etc. online.	0	1	2	3	4
6. I get positive comments online.	0	1	2	3	4
7. When I'm online, people tell me they like the things I say or do	0	1	2	3	4
8. Online, people are interested in me as a person.	0	1	2	3	4
9. People support me online.	0	1	2	3	4
10. When I'm online, people make me feel good about myself.	0	1	2	3	4
11. When I'm online, I talk or do things with other people.	0	1	2	3	4
12. People spend time with me online	0	1	2	3	4
13. People hang out and do fun things with me online.	0	1	2	3	4
14. Online, I belong to groups of people with similar interests	0	1	2	3	4
15. People talk with me online about things we have in common.	0	1	2	3	4
16. Online, I connect with people who like the same things I do.	0	1	2	3	4
17. I am part of groups online.	0	1	2	3	4
18. When I'm online, people joke and kid around with me.	0	1	2	3	4
19. People relate to me through things I say or do online.	0	1	2	3	4
20. Online, people make me feel like I belong.	0	1	2	3	4
21. When I'm online, people give me useful advice.	0	1	2	3	4
22. Online, people provide me with helpful information.	0	1	2	3	4
23. If I had a problem, people would help me online by saying what they would do.	0	1	2	3	4
24. Online, people would tell me where to find help if I needed it.	0	1	2	3	4
25. People help me learn new things when I'm online.	0	1	2	3	4
26. People offer suggestions to me online.	0	1	2	3	4
27. People tell me things I want to know online.	0	1	2	3	4
28. When I'm online, people help me understand my situation better.	0	1	2	3	4
29. If I had a problem, people would share their point of view online.	0	1	2	3	4
30. People help me see things in new ways when I'm online.	0	1	2	3	4
31. People online would help me with money or other things if I needed it.	0	1	2	3	4
32. When I'm online, people help me with school or work.	0	1	2	3	4
33. Online, people help me get things done.	0	1	2	3	4

0 = Never 1 = Rarely 2 = Sometimes 3 = Pretty Often 4 = A lot					
34. If I needed a hand doing something, I go online to find people who will help out.	0	1	2	3	4
35. Online, people offer to do things for me.	0	1	2	3	4
36. Online, people help me with causes or events that I think are important.	0	1	2	3	4
37. When I'm online, people have offered me things I need.	0	1	2	3	4
38. When I need something, I go online to find someone who might lend it to me.	0	1	2	3	4
39. When I need a hand with school or work things, I get help from others online.	0	1	2	3	4
40. I contact people online to get help or raise money for things I think are important.	0	1	2	3	4

Appendix C

The Multidimensional Scale of Perceived Social Support (MSPSS)

We are interested in how you feel about the following statements. However, note the following:

- Please answer to the questions only based on how you felt **during the COVID-19 pandemic**.
- Please note that this measure is only focused on **in person (face-to-face) social support**, not online social support as the measure above.

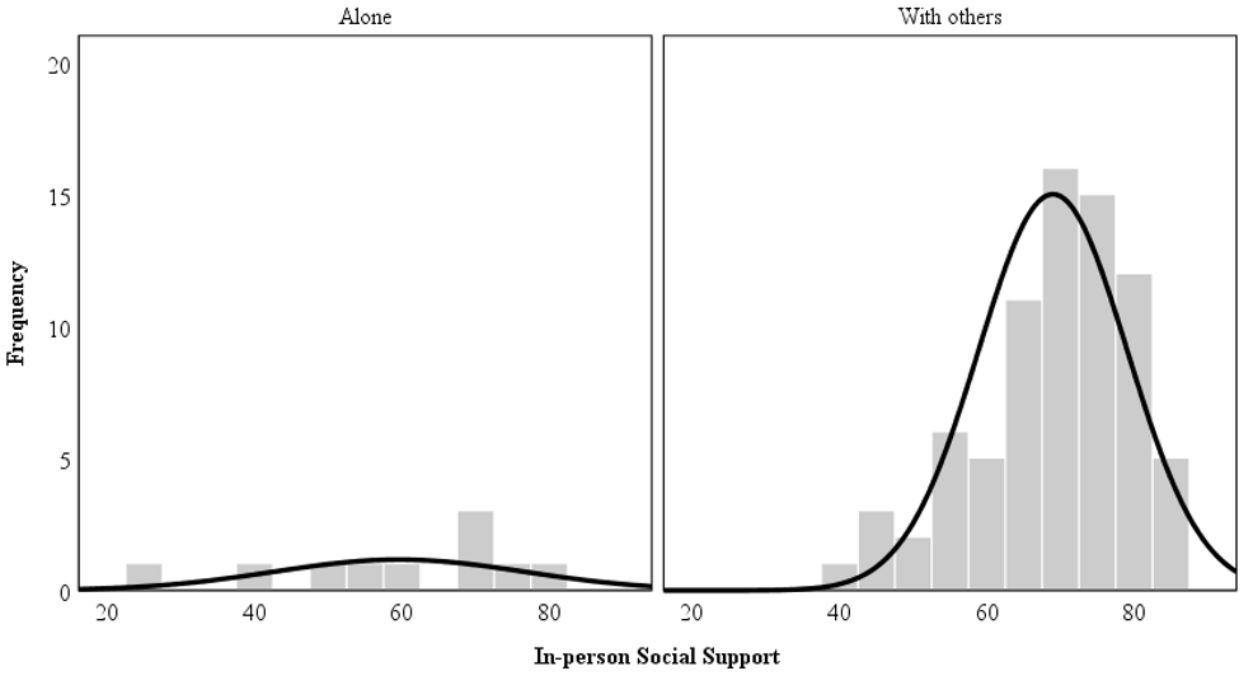
Taking these two into account, read each statement carefully. Indicate how you feel about each statement.

1 = Very Strongly Disagree 2 = Strongly Disagree 3 = Mildly Disagree 4 = Neutral 5 = Mildly Agree 6 = Strongly Agree 7 = Very Strongly Agree							
1. There is a special person who is around when I am in need.	1	2	3	4	5	6	7
2. There is a special person with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
3. My family really tries to help me.	1	2	3	4	5	6	7
4. I get the emotional help and support I need from my family.	1	2	3	4	5	6	7
5. I have a special person who is a real source of comfort to me.	1	2	3	4	5	6	7
6. My friends really try to help me.	1	2	3	4	5	6	7
7. I can count on my friends when things go wrong.	1	2	3	4	5	6	7
8. I can talk about my problems with my family.	1	2	3	4	5	6	7
9. I have friends with whom I can share my joys and sorrows.	1	2	3	4	5	6	7
10. There is a special person in my life who cares about my feelings.	1	2	3	4	5	6	7
11. My family is willing to help me make decisions.	1	2	3	4	5	6	7
12. I can talk about my problems with my friends.	1	2	3	4	5	6	7

Appendix D

Figure A1

Histograms of the Frequencies of Reported In Person Social Support by the Dummy Living Situation



Note. $N = 84$. The category 'alone' had $n = 10$ and 'with others' $n = 76$. The normal curves are estimations made by the statistical program used, SPSS.

Appendix E

Table A1

The Definitions of the Online Social Support Subscales

Esteem/Emotional support	"communications from others that convey being held in high esteem, offering help in managing one's emotional state, or expressing acceptance, intimacy, caring, liking, respect, validation, empathy, or sympathy."
Social Companionship	"conveys a sense of belonging, either directly via expressions of inclusivity or indirectly by spending time together in leisure and recreational activities."
Informational support	"help in defining, understanding, and coping with problems; it may take the form of giving advice, offering appraisal support, sharing new information or perspectives, or providing reference to new resources."
Instructional support	"provision of financial aid, material resources, and needed services; it includes offering help in getting necessary tasks done, providing something of use, performing a task, or taking on a responsibility."

Note. Adapted from "The Online Social Support Scale: Measure development and validation," by E. A. Nick, D. A. Cole, S.-J. Cho, D. K. Smit, T. G. Carter, and R. L. Zelkowitz, 2018, *Psychological Assessment 30*(9), p.3 (https://doi.org/10.1037/pas0000558). Copyright 2019 by the American Psychological Association.