



Article

Understanding Procrastination in First-Year Undergraduates: An Application of Attribution Theory

So Yeon Lee * and Nathan C. Hall

Department of Educational and Counselling Psychology, McGill University, Montreal, QC H3A1Y2, Canada; nathan.c.hall@mcgill.ca

* Correspondence: so.yeon.lee@mail.mcgill.ca

Received: 29 April 2020; Accepted: 22 July 2020; Published: 30 July 2020



Abstract: Despite findings showing first-year undergraduates persistently engage in academic procrastination, research exploring students' perceived reasons for their procrastination and procrastination-related emotions is lacking. The present exploratory study utilized Weiner's (2010) attribution theory to examine the relationships between procrastination as well as students' causal explanations and emotions specific to procrastination. Findings of 429 first-year Canadian undergraduates showed students to attribute procrastination mainly to internal and stable factors, and less so to personally controllable factors. Students who attributed procrastination to reasons within themselves reported higher levels of negative emotions, with strong direct effects of procrastination on negative emotions also observed. These findings demonstrate the importance of considering students' causal attributions as potential contributors to their emotional experiences surrounding procrastination and encourage future longitudinal research on relations between academic procrastination, attributions, and emotional outcomes.

Keywords: procrastination; attribution; emotions; first-year undergraduates

1. Introduction

Over 70% of undergraduate students report procrastinating on academic tasks (Ellis and Knaus 1977; Ferrari et al. 2007; Schraw et al. 2007; Steel 2007). Procrastination has been consistently shown to have negative effects on students' learning approaches (Sæle et al. 2017) and academic performance (Balkis et al. 2013; Gareau et al. 2018; Kim and Seo 2015), psychological well-being (Schraw et al. 2007; Tice and Baumeister 1997), and emotions (e.g., anxiety; Fritzsche et al. 2003). In particular, first-year undergraduates struggle to effectively manage their time and tend to procrastinate as a result of overestimating their academic abilities (Thibodeaux et al. 2017). First-year students are particularly susceptible to academic procrastination due to varied novel opportunities (e.g., socialization, volunteering, athletics) and challenges (e.g., academic setbacks and decisions, greater autonomy) encountered during the transition to post-secondary education. The first-year experience thus represents a critical period in which to examine student motivation, success, and self-regulation experiences (Gardner 1986; Tinto 1993). Moreover, in order to develop effective interventions to reduce procrastination, additional research is needed to directly explore first-year students' perceived reasons for this maladaptive behavior.

Procrastination has been most commonly defined as a dysfunctional phenomenon involving needless delays on tasks or behaviors despite individuals foreseeing the negative consequences thereof (Steel 2007). This typical conceptualization of procrastination has attracted substantial research interest across an array of fields, encouraging researchers to uncover potential causes. Existing research has examined potential predictors of procrastination among university students including

cognitive and meta-cognitive strategies (Howell and Watson 2007; Wolters et al. 2017), emotions (Ferrari et al. 2009; Tice and Baumeister 1997), personality traits (Hess et al. 2000), and motivational variables (e.g., personal control, Janssen and Carton 1999; self-efficacy, Klassen et al. 2008). Moreover, the definition of procrastination itself has also been debated by researchers, with some suggesting that beyond its common operationalization as a maladaptive behavior having negative effects on academic achievement and well-being, procrastination may also produce positive learning outcomes (e.g., “active” procrastination, Choi and Moran 2009; Chu and Choi 2005).

Empirical studies on active procrastination show inconsistent findings when contrasting active and traditional forms of procrastination (Chowdhury and Pychyl 2018; Corkin et al. 2011; Hensley 2014). For example, researchers who advocate for active procrastination have found it to correspond with better academic performance (Kim et al. 2017; Seo 2012), creativity (Liu et al. 2017), and higher-order thinking (Lee 2013). However, other findings show limited evidence distinguishing active from passive procrastination (Wolters et al. 2017) and challenge the construct validity of active procrastination as instead representing an active form of delay (Chowdhury and Pychyl 2018). Despite the ongoing arguments on positive forms of procrastination, it is nevertheless worthwhile to consider how individuals themselves perceive the risks, benefits, and causes of their procrastination behavior (Park and Sperling 2012).

Procrastination has consistently been proposed to incorporate cognitive, affective, and behavioral components (Rothblum et al. 1986). In research by Cao (2012), the cognitive component, especially beliefs concerning the efficacy of procrastination, has been highlighted as important to understanding procrastination tendencies. Undergraduate students who believed that procrastination could be useful to themselves (e.g., creativity) showed high tendencies to actually procrastinate, over and above the effects of academic self-efficacy and achievement goal orientations (Cao 2012). In other words, undergraduates’ beliefs about procrastination served as a stronger predictor of procrastination than other more general motivational variables regarded as critical correlates of learning outcomes (e.g., self-efficacy, Haycock et al. 1998; Klassen et al. 2008). Similarly, findings from Park and Sperling (2012) showed students who perceived their procrastination as intentional and effective express greater confidence in being able to finish tasks on time by working under pressure. As positive perceptions of procrastination are not assessed in traditional self-report measures (e.g., Procrastination Assessment Scale-Students, Solomon and Rothblum 1984; Pure Procrastination Scale, Steel 2010), further research is needed to examine students’ beliefs as to the causes of their procrastination, and how these perceived causes impact their academic development.

1.1. Academic Procrastination, Attributions, and Emotions

One particularly useful theoretical perspective that could help to understand students’ explanations for their procrastination is Weiner (2010) attribution theory. According to attribution theory, the causal explanations one makes for unexpected, negative, or important events in achievement settings have specific emotional consequences (e.g., guilt, hope) that, in turn, lead to behavioral outcomes (e.g., persistence). In educational contexts, research based on attribution theory has shown undergraduates who make causal attributions for academic failure that are internal to themselves (internal locus of causality), variable over time (temporally unstable), or are personally controllable (e.g., insufficient effort, ineffective strategies) experience better learning and achievement outcomes (e.g., for a review, see Hall et al. 2007).

Weiner (1985, 2000, 2006) proposed that any causal attribution could be classified according to three underlying dimensions: locus of causality, stability, and controllability. *Locus of causality* refers to internal factors within the individual (e.g., ability, effort) or external factors outside the individual (e.g., context, luck). If a student evaluates a lack of ability as a reason for their poor feedback from the teacher, they are typically understood as making an internal attribution. *Stability* distinguishes whether the cause of the event is perceived as temporal or permanent over time. For instance, whereas intelligence may be viewed as temporally stable, other variables such as effort, mood, or luck

are more likely to be perceived as variable over time. *Controllability* refers to whether individuals believe the perceived cause can be managed or prevented through factors under their personal control. For instance, whereas blaming low grades on bad luck could reflect an external, unstable, and personally uncontrollable attribution, ascribing failure to low effort would instead typically represent an internal, unstable, and personally controllable attribution.

Following from studies showing greater perceived responsibility for academic outcomes (locus of control, Rotter 1966) correspond with procrastination frequency (Carden et al. 2004; Janssen and Carton 1999; Rothblum et al. 1986), scattered research based on attribution theory further shows students' more specific causal beliefs to also impact their procrastination behavior. For example, research by Gargari et al. (2011) found that undergraduates who attributed their academic failure to internal and stable factors (e.g., low ability) were more likely to procrastinate, whereas students who credited their academic success to personal efforts reported lower academic procrastination. Similar findings were observed in a study by Hoppe (2011) who showed undergraduates with high academic procrastination levels also more often attributing negative academic outcomes to internal and stable factors (a negative "explanatory style"). Although these preliminary findings are consistent with Weiner's (1985) attribution theory, more research is needed to further explore the effects of causal attributions specific to academic procrastination in first-year students (as opposed to attributions for performance more generally).

Concerning the potential psychological effects of students' attributions for procrastination, theories of procrastination and attributions both imply important consequences for students' emotional experiences. Findings consistently show academic procrastination to provoke negative emotions (e.g., anxiety, Solomon and Rothblum 1984; shame, Fee and Tangney 2000; guilt, Pychyl et al. 2000) as well as lower levels of positive emotions (e.g., hope, Alexander and Onwuegbuzie 2007). According to Weiner (2010) attribution theory, negative emotions like helplessness can also be elicited by attributions for academic challenges to stable and permanent factors (e.g., ability, intelligence), with more positive emotions instead elicited by attributions to personally controllable factors (e.g., hope). However, research examining these plausible theory-informed links between students' causal attributions for their procrastination and their procrastination-related emotional experiences is currently lacking.

1.2. The Present Research

Although the prevalence and correlates of procrastination have been consistently empirically evaluated over the past 30 years, research on relationships between procrastination, causal attributions, and emotions in educational settings remains underexplored. Of the related studies conducted to date in this domain, only relations between students' causal attributions for achievement-related outcomes and procrastination behavior have been explored (Gargari et al. 2011), leaving important questions about how students specifically attribute their procrastination behaviors and the emotional consequences thereof unanswered. The present study, thus, examined the relationships between first-year undergraduate students' tendency to engage in prototypic procrastination behaviors, their causal attributions for this procrastination, as well as their positive and negative emotional experiences about their procrastination as outlined in the following three hypotheses. Thus, whereas the present study adopted the typical definition of procrastination behaviors as involving needless delay despite anticipating negative consequences (Steel 2007), it further explored students' beliefs about procrastination (e.g., as due to potentially adaptive reasons, cf. "active" procrastination, Cao 2012; Choi and Moran 2009) and their corresponding emotional experiences.

1.3. Research Hypotheses

Hypothesis 1. *Procrastination tendency and attributions.*

First-year students with high levels of procrastination were anticipated to attribute their procrastination behaviors primarily to internal and stable factors. This hypothesis was derived

from existing findings showing higher academic procrastination to correspond with internal and stable attributions for poor academic performance more generally (Gargari et al. 2011) and findings with students showing procrastination to typically be perceived as an internal, self-regulatory failure experience (i.e., underregulation hypothesis, Steel 2007).

Hypothesis 2. *Relations with positive emotions.*

(a) Procrastination tendency was also expected to correspond with lower levels of positive emotions consistent with previous academic procrastination findings (Alexander and Onwuegbuzie 2007; Sirois and Giguere 2018). (b) Moreover, given existing literature showing procrastination to have positive connotations for some individuals (Kim et al. 2017; Liu et al. 2017; Park and Sperling 2012; Seo 2013), it was further hypothesized that students who attributed their procrastination to temporally unstable and personally controllable factors would demonstrate more positive emotions. (c) Finally, causal attributions were expected to mediate the relationship between procrastination and positive emotions, such that if students who procrastinated more often also perceived their procrastination to be under their personal control or unstable over time, these attributions should, in turn, correspond with more positive emotions.

Hypothesis 3. *Relations with negative emotions.*

(a) Lastly, higher procrastination was hypothesized to correspond with stronger negative emotions. This hypothesis is consistent with the underregulation hypothesis that proposes negative emotions to be elicited by self-regulation failure (e.g., Balkis and Duru 2016). (b) First-year students who attributed procrastination to internal factors (e.g., lack of ability) were further anticipated to experience greater negative affect (e.g., guilt, Neumann 2000), with students who attributed procrastination to personally controllable factors (e.g., lack of effort) also expected to experience more negative motivating emotions such as guilt and regret (cf. findings for academic failure attributions, Hall et al. 2007). (c) Moreover, internal and personally controllable attributions were expected to mediate the relationship between procrastination and negative emotions. Students who procrastinated more often were expected to perceive a greater sense of personal ownership (internal attributions; e.g., personality) or personal influence over their academic procrastination (personally controllable attributions, such as lack of effort) and, in turn, report more negative emotions specific to procrastination.

2. Method

2.1. Participants and Procedures

The study sample consisted of 429 first-year undergraduates enrolled at a research-intensive Canadian university (73% female, $M_{\text{age}} = 18.83$ years; 51% English first language). The average high school GPA of participants was 89% ($SD = 8.46$), and the academic disciplines of participants included arts (36%), science (23%), engineering (11%), agricultural and environmental sciences (9%), and education (8%). Participants' ethnicities were predominantly Caucasian (58%), East Asian (15%), South Asian (5%), and West Asian (4%). The study was approved by the institutional Research Ethics Board with data collected in the fall 2018 semester. First-year students were recruited via internal email in coordination with the campus student affairs office, with participants first completing an informed consent form outlining in detail the study protocols (e.g., confidentiality, risk, data management, compensation). Students subsequently completed an online questionnaire including self-report demographic questions (e.g., gender, age, discipline, high school grade) and the study measures (e.g., procrastination, causal attributions, emotions). Students were entered into cash prize draws (i.e., 5 cash prizes, 50 Canadian dollars) as compensation for the participation.

2.2. Study Measures

Procrastination tendency. Students' self-reported tendency to engage in prototypic academic procrastination behaviors was measured using an adapted version of Steel's (2010) Pure Procrastination Scale (PPS). The scale preamble was modified to direct students to respond to scale items specifically in reference to their first-year undergraduate experiences. The scale consisted of 12 items (e.g., "I delay making decisions until it's too late"; "I find myself running out of time") rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree).

Procrastination attributions. An adapted version of McAuley et al.'s (1992) revised Causal Dimension Scale (CDSII) was administered in which students reported the primary reason for their academic procrastination in an open-ended field and then completed four, two-item measures assessing that reason's (a) locus of causality (e.g., 9 = inside of you, 1 = outside of you), (b) stability (e.g., 9 = permanent, 1 = temporary), (c) personal control (e.g., 9 = over which you have power, 1 = over which you have no power), and (d) external control (e.g., 9 = under the power of other people, 1 = not under the power of other people). The initial open-ended question was thus included primarily to encourage participants to reflect on one main reason underlying their procrastination and provide a reference point for their responses to the more critical attributional dimension items that followed.

Procrastination emotions. Multiple discrete positive and negative emotions specific to procrastination were assessed using an 11-item, five-point measure (1 = not at all to 5 = very strong) based on Weiner's (2010) attribution theory (for an equivalent measure specific to academic performance, see Hall et al. 2007). All emotions were specified in Weiner's model as dependent on causal attributions (e.g., internal → pride; unstable → hope), with scale items consisting of both positive emotions (four items: surprise, pride, hope, relief) and negative emotions (seven items: guilt, shame, regret, anger at yourself/others, helplessness, apathy) pertaining directly to "procrastinating on an academic task".

3. Results

3.1. Preliminary Analysis

Descriptive information (means, standard deviations, observed ranges) and internal reliabilities for the study measures are displayed in Table 1, with correlations between the main study variables presented in Table 2. Correlational findings showed that despite locus of causality and personal controllability being positively correlated, procrastination was positively correlated with an internal locus but negatively correlated with personal control. A significant negative correlation was also found between the stability dimension and personal control, with positive correlations otherwise found between the causal dimensions. Not surprisingly, procrastination tendency was positively associated with negative emotions.

Exploratory factor analyses (EFAs) and confirmatory factor analyses (CFAs) further validated the integrity of the underlying measurement model prior to the main structural equation modelling (SEM) analysis (Byrne 2011 see Figure 1, Tables 3–6). Procrastination-specific emotions were evaluated using reduced dimensions based on valence consistent with previous research on failure attribution-emotion relations in undergraduates (cf. Perry et al. 2007), with three low-loading emotions items being removed prior to analysis (i.e., surprise, anger at others, and apathy; see Tables 4 and 5). Finally, preliminary analyses to identify potential covariates showed significant initial differences on study variables as a function of first language and international status. Although the effect size was minimal ($\eta^2 = 0.05$), students who spoke a first language other than English or French reported higher scores on personally controllable procrastination attributions ($F(10, 385) = 2.24, p = 0.015$) and positive emotions ($F(10, 366) = 1.94, p = 0.039$). Non-international students also reported higher levels of perceived personal control compared to international students ($t(393) = -3.82, p < 0.001, r^2 = 0.04$).

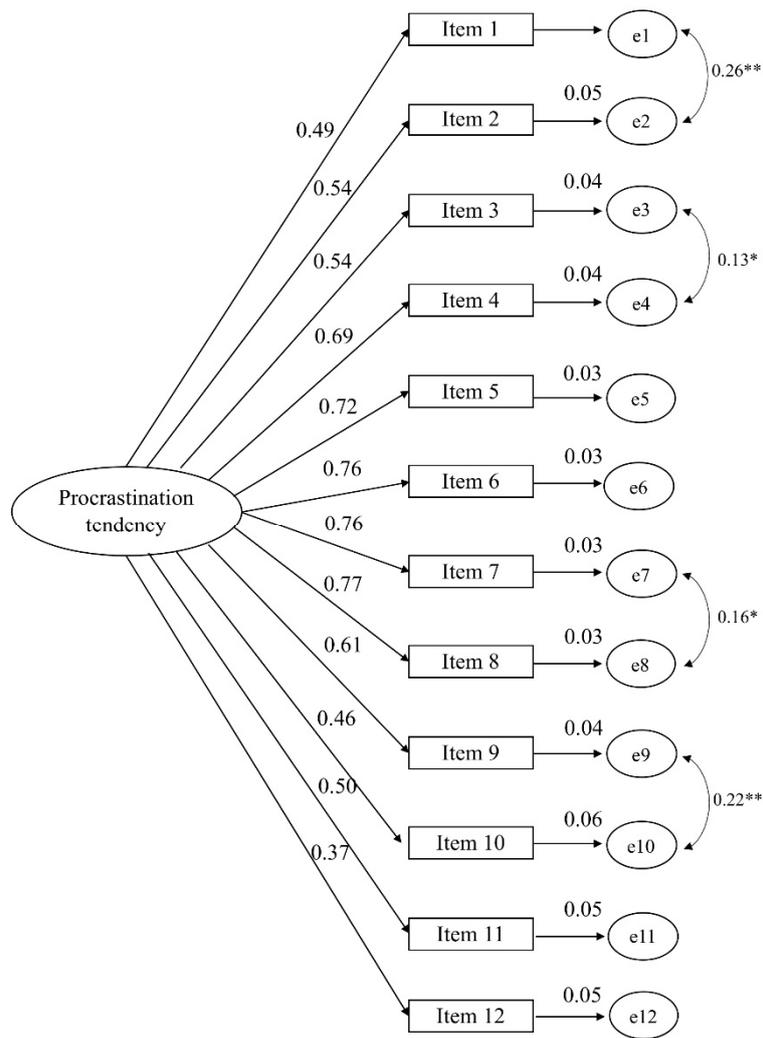


Figure 1. Confirmatory factor analysis (CFA) results for procrastination tendency; all standardized loadings are significant at $p < 0.001$. * $p < 0.05$, ** $p < 0.001$. Model fit indices: $\chi^2 = 318.395$, $df = 50$, $p < 0.001$, CFI = 0.829, RMSEA = 0.118.

Table 1. Descriptive Statistics for Study Measures.

Scale	Observed Range	<i>M</i>	<i>SD</i>	α/r	<i>n</i>
Procrastination tendency	1.08–5.00	3.06	0.81	0.88	377
Procrastination attributions					
Locus of causality	2.00–9.00	6.86	1.60	0.47	397
Stability	1.00–9.00	4.08	1.71	0.36	395
Personal control	1.00–9.00	6.80	1.60	0.57	396
External control	1.00–9.00	3.94	1.98	0.58	395
Positive emotions	1.00–5.00	1.83	0.81	0.67	377
Negative emotions	1.14–4.71	3.04	0.74	0.76	377

Note: As the four causal dimensions were each calculated using two self-report items, internal reliability for these measures was estimated by zero-order, inter-item correlations (*r*); higher scores on the locus of causality measure indicate internal attributions, lower scores represent external attributions.

Table 2. Zero-order Correlation among Study Variables.

	1	2	3	4	5	6	7
1. Procrastination tendency	–						
2. Locus of causality	0.18 **	–					
3. Stability	0.27 **	0.11 *	–				
4. Personal control	–0.23 **	0.19 **	–0.36 **	–			
5. External control	0.05	–0.28 **	0.15 **	–0.09	–		
6. Positive emotions	0.04	–0.07	0.06	–0.02	0.11 *	–	
7. Negative emotions	0.36 **	0.15 **	0.17 *	–0.09	0.09	–0.08	–

Note: * $p < 0.05$, ** $p < 0.001$.

Table 3. CFA Results for Procrastination Attributions.

Observed Variable	Latent Construct	β	<i>B</i>	<i>SE</i>
Item 6	Locus of causality	0.636	1.000	
Item 8		0.730	0.921 **	0.153
Item 3	Stability	0.495	1.000	
Item 10		0.721	1.513 **	0.270
Item 2	Personal control	0.667	1.000	
Item 9		0.855	1.419 **	0.177
Item 5	External control	0.780	1.000	
Item 11		0.740	0.906 **	0.157

Note: ** $p < 0.001$; CFA = confirmatory factor analysis.

Table 4. Exploratory Factor Analysis (EFA) Results for Procrastination Emotions.

Item	Factor Loading	
	1	2
Factor 1: Positive emotions		
Surprise	0.37	0.16
Pride	0.76	–0.13
Hope	0.44	–0.11
Relief	0.78	–0.06
Factor 2: Negative emotions		
Guilt	0.04	0.67
Shame	0.06	0.73
Regret	–0.07	0.68
Anger (at yourself)	0.04	0.78
Anger (at others)	0.42	0.21
Helplessness	0.08	0.57
Apathy	0.29	0.22

Note: Extraction method: maximum likelihood; 2 factors were extracted; rotation method: Varimax with Kaiser Normalization.

Table 5. Competing CFA Models for Procrastination Emotions.

Model	χ^2	<i>df</i>	χ^2/df	CFI	RMSEA
Single-factor model	410.867	42	9.783	0.634	0.143
Two factors (11 items)	212.931	43	4.952	0.831	0.096
Two factors (8 items)	77.193	19	4.053	0.932	0.090

Note: CFA = confirmatory factor analysis, CFI = comparative fit index, RMSEA = root mean square error of approximation.

Table 6. Final CFA Results for Procrastination Emotions.

Observed Variable	Latent Construct	β	<i>B</i>	<i>SE</i>
Pride	Positive	0.831	1.000	
Hope	Positive	0.455	0.616 **	0.093
Relief	Positive	0.710	0.978 **	0.130
Guilt	Negative	0.677	1.000	
Shame	Negative	0.732	1.248 **	0.101
Regret	Negative	0.659	0.916 **	0.091
Anger at yourself	Negative	0.779	1.217 **	0.111
Helplessness	Negative	0.558	0.907 **	0.104

Note: ** $p < 0.001$; CFA = confirmatory factor analysis.

3.2. Main Analyses

Informed by [Weiner's \(2010\)](#) attribution theory, an SEM analysis examined the proposed relationships between procrastination tendency (IV), procrastination attribution dimensions (mediators), and procrastination emotions (e.g., positive, negative; DVs). Following from prior research showing initial differences in procrastination prevalence as a function of age ([Kim and Seo 2015](#); [Steel 2007](#)) and gender ([Deemer et al. 2014](#); [Özer et al. 2009](#)), and preliminary analyses showing initial differences in our student sample due to first language and international status, the effects of these four demographic variables were additionally modeled as covariates in our main analyses. SEM analyses were conducted utilizing Mplus 7.2 software, as were analyses of the significance of the observed indirect effects of procrastination tendency on emotions as mediated by attributions. The SEM analyses also used maximum likelihood estimation to estimate missing values ([Byrne 2011](#)). Model fit indices included chi-square (χ^2), comparative fit index (CFI), Tucker–Lewis Index (TLI), root mean square error of approximation (RMSEA), and standardized root mean residual (SRMR). Residual errors between the mediators and among the dependent measures were also correlated to model the observed zero-order covariance (see [Table 2](#)). Based on the modification indices for the measurement model of procrastination tendency, four residuals between the scale items were continually intercorrelated in the main analyses.

The final SEM model demonstrated moderate fit: $\chi^2 = 966.546$, $df = 421$, $p < 0.001$, CFI = 0.849, TLI = 0.825, RMSEA = 0.057, and SRMR = 0.059 (see [Figure 2](#) for standardized parameter estimates). Findings showed procrastination tendency to directly predict more negative emotions ($\beta = 0.30$, $p < 0.001$). First-year students who more frequently procrastinated also attributed their procrastination mainly to causes that were internal to themselves ($\beta = 0.29$, $p < 0.001$) and stable over time ($\beta = 0.35$, $p < 0.001$), and avoided personally controllable attributions ($\beta = -0.21$, $p < 0.001$). Students who more strongly attributed their procrastination to internal factors, in turn, reported more negative emotions ($\beta = 0.24$, $p = 0.003$).

Procrastination tendency did not significantly predict positive emotions, either directly or indirectly, and did not predict attributions to external factors under the control of others. Students who more strongly attributed their procrastination to factors under the control of others nevertheless reported higher levels of negative emotions ($\beta = 0.22$, $p = 0.002$). Supplemental analyses further showed the specific indirect effect of procrastination tendency on negative emotions via locus of causality to be statistically significant ($\beta = 0.07$, $SE = 0.03$, $p = 0.01$).

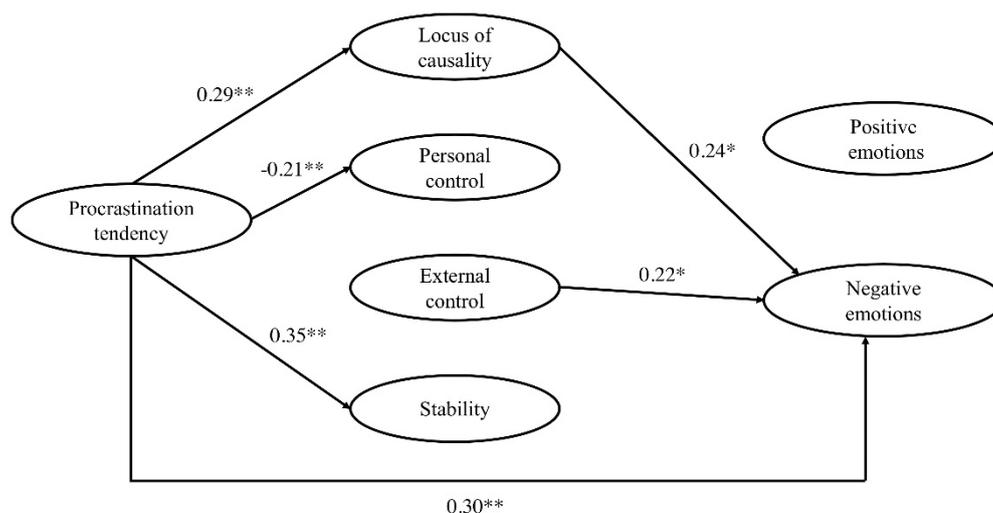


Figure 2. Structural equation model of hypothesized relations between procrastination tendency, attributions, and emotions; standardized estimates are displayed; * $p < 0.05$, ** $p < 0.001$.

4. Discussion

First-year undergraduates typically encounter personal and academic difficulties upon entering higher education, with university experiences often differing substantially from high school with respect to requirements for personal autonomy, time management, and self-regulation. In this context, procrastination is common among post-secondary students who frequently voluntarily delay their academic tasks (e.g., writing a term paper, studying for exams) despite anticipating negative consequences (Rothblum et al. 1986; Steel 2007). Whereas existing research has examined the correlates of academic procrastination, students' own perspectives as to the causes of their procrastination remain underexplored. To address this research gap, this study applied Weiner's (2010) attribution theory to understand first-year students' causal explanations for their procrastination and corresponding relations with both positive and negative emotions specific to procrastination. As outlined below, study findings provided empirical support for hypothesized relationships between academic procrastination tendency, attributions for procrastination, and emotions about procrastination.

4.1. Hypothesis 1: Procrastination Tendency and Attributions

The first hypothesis proposed that first-year university students who reported stronger procrastination tendencies should more strongly attribute their procrastination to internal and stable factors. As anticipated, higher academic procrastination tendency corresponded with more attributions to factors internal to the student (versus external) and factors that were unlikely to change over time. A follow-up inspection of qualitative responses to the open-ended CDSII item concerning students' perceived primary cause of their academic procrastination showed reported internal attributions to include fear, anxiety, depression, and ADHD, and reported stable attributions to include persistent online distractions (e.g., Netflix, Facebook), language difficulties, workload, and mental health challenges. These findings are thus consistent with prior research showing performance attributions to internal and stable factors to correspond with greater academic procrastination (Gargari et al. 2011; Hoppe 2011) and provide clear empirical support for Hypothesis 1.

However, an additional unexpected finding showed students who procrastinated more often to be less likely to attribute their procrastination on academic tasks to personally controllable factors. Qualitative responses suggested such personally controllable attributions to additionally refer to lack of motivation (e.g., low interest and confidence in managing academic tasks). This pattern of results thus suggests that not only did first-year students in the present study tend to attribute their academic procrastination to their innate abilities and persistent mental health difficulties (internal attributions),

they were also particularly unlikely to believe that their procrastination could be prevented through their own efforts (e.g., personal motivational).

4.2. Hypothesis 2: Procrastination, Attributions, and Positive Emotions

According to the second hypothesis, greater procrastination tendency was expected to be associated with lower positive emotions (Hypothesis 2a) with benefits of procrastination attributions to unstable or personally controllable reasons (Hypothesis 2b) expected to mediate relations between procrastination tendencies and positive emotions (Hypothesis 2c). Contrary to each hypothesis, there were no direct or indirect effects observed on positive emotions from either procrastination tendency or attributions. These findings are contrary to previous findings showing procrastination to correspond with lower positive affect (e.g., hope, [Alexander and Onwuegbuzie 2007](#)), as well as emerging perspectives suggesting that procrastination may be accompanied with high self-efficacy (e.g., perceived controllability) and positive outcomes (e.g., time management, performance, [Choi and Moran 2009](#); [Chu and Choi 2005](#)). Accordingly, these findings suggest that although benefits of procrastination may be observed on academic achievement (e.g., grade point average), they are unlikely to be observed on emotion-related variables.

4.3. Hypothesis 3: Procrastination, Attributions, and Negative Emotions

The third study hypothesis anticipated a strong relationship between procrastination tendencies and negative emotions (Hypothesis 3a), and that attributions for procrastination to internal attributions generally, or personally controllable factors more specifically, would also correspond with stronger negative emotions (Hypothesis 3b). Moreover, these attributional dimensions were expected to mediate relations between procrastination and negative emotions (Hypothesis 3c). Findings supported Hypothesis 3a in showing first-year students who reported higher procrastination tendencies to also report more negative emotions concerning their procrastination (i.e., guilt, shame, regret, anger, helplessness). Moreover, the more students attributed their academic procrastination to reasons within themselves (internal locus), the more likely they were to experience negative emotions, thus partially supporting Hypothesis 3b. This finding is consistent with the concept of self-serving bias that proposes attributions to external factors to mitigate negative emotional reactions to personal failure experiences ([Bradley 1978](#); [Mezulis et al. 2004](#)).

Concerning the proposed mediational pathways (Hypothesis 3c), although procrastination did positively correspond with internal attributions that, in turn, corresponded with stronger negative emotions, the effect size for this indirect effect was negligible suggesting that this causal dimension was not a strong mediator. Thus, whereas previous literature has suggested a strong relationship between internal attributions for poor academic performance and negative emotions (e.g., [Neumann 2000](#)), only a marginal indirect effect was observed when evaluating the effects of attributions for academic procrastination on negative emotions thus only partially supporting Hypothesis 3c.

Finally, an unanticipated finding showed students who attributed procrastination to the controllable behavior of others to experience more negative emotions. Inspection of qualitative findings showed such externally controllable attributions to refer to factors such as socialization and social media (e.g., Facebook, Internet). Although this finding contradicts the concept of fundamental attribution error (i.e., external attributions preserving self-worth, [Jellison and Green 1981](#)), it is nevertheless consistent with [Weiner's \(2010\)](#) theory in which attributions for failure to the controllable actions of others is proposed to predict specific negative emotions (i.e., anger). This finding also extends upon procrastination research in that although blaming others for one's needless delay may help students justify their procrastination ([Knaus 2000b](#)) and maintain a positive view of themselves ([Kernis et al. 1992](#)), it can also contribute to higher levels of negative emotions concerning their procrastination, such as helplessness (see [Knaus 2000a](#)).

5. Study Limitations and Implications

When interpreting the present results, multiple limitations warrant consideration. First, although the qualitative, open-ended component of the attribution measure provided additional qualifying information beyond the Likert-style attribution ratings, it permitted only a single main perceived contributor thus requiring further qualitative interviewing to obtain a more comprehensive profile of the various causes students believe to be responsible for their procrastination. Moreover, as it is possible that first-year students may have underreported their procrastination due to social desirability bias, more objective observations are recommended, such as how many hours or days a student delayed an academic task (e.g., Wang and Englander 2010) and real-time, state assessments (cf. experience sampling assessments of students' emotions, Goetz et al. 2016).

Furthermore, the cross-sectional design of the study precluded examination of alternate directional or reciprocal relationships between study variables. Although our hypotheses and analytical model was grounded on attribution theory (Weiner 1985) that proposes a sequential pattern in which a negative event (e.g., procrastination as self-regulation failure) is followed by causal search resulting in attributions with underlying dimensions and corresponding emotions, future studies should adopt longitudinal research designs in which these assumed directional relations are directly tested (e.g., cross-lagged SEM analyses). Our main SEM findings were also limited by only moderate fit indices being observed, highlighting the need for future research aimed at developing more reliable, multi-item scales to assess students' procrastination tendencies, attributions, and emotion. Finally, as our sample consisted exclusively of first-year undergraduates, future studies with more advanced undergraduates are recommended, with existing research on procrastination in graduate students being particularly lacking (cf. Cao 2012; Onwuegbuzie 2004; Onwuegbuzie and Collins 2001).

Concerning practical study implications, the present findings suggest that university faculty and advisors should advise students to discourage making attributions for procrastination to factors that are under the control of others (e.g., social media), or internal factors that the students themselves cannot control (e.g., learning difficulties) due to anticipated negative effects on these perceived causes for procrastination on student's emotional well-being. These findings, thus, further imply that orientation programs that discourage students from blaming others or assuming personal responsibility for factors they cannot control (attributional retraining interventions, e.g., Hall et al. 2007) may help to reduce the stigma and negative emotional consequences of procrastination in first-year students. In sum, the present results underscore the importance of providing appropriate feedback and advice to students concerning their procrastination so as to mitigate possible negative effects of maladaptive beliefs on their well-being so as to promote a more enjoyable and productive first-year experience.

Author Contributions: Conceptualization, S.Y.L.; Formal analysis, S.Y.L.; Funding acquisition, N.C.H.; Methodology, S.Y.L. and N.C.H.; Project administration, N.C.H.; Supervision, N.C.H.; Writing—original draft, S.Y.L.; Writing—review and editing, N.C.H. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Social Sciences and Humanities Research Council (SSHRC), grant number 890-2012-0038.

Conflicts of Interest: The authors declare no conflict of interest.

References

- Alexander, Elizabeth S, and Anthony J. Onwuegbuzie. 2007. Academic procrastination and the role of hope as a coping strategy. *Personality and Individual Differences* 42: 1301–10. [CrossRef]
- Balkis, Murat, and Erdinc Duru. 2016. Procrastination, self-regulation failure, academic life satisfaction, and affective well-being: Underregulation or misregulation form. *European Journal of Psychology of Education* 31: 439–59. [CrossRef]
- Balkis, Murat, Erdinc Duru, and Mustafa Bulus. 2013. Analysis of the relation between academic procrastination, academic rational/irrational beliefs, time preferences to study for exams, and academic achievement: A structural model. *European Journal of Psychology of Education* 28: 825–39. [CrossRef]

- Bradley, Gifford W. 1978. Self-serving biases in the attribution process: A reexamination of the fact or fiction question. *Journal of Personality and Social Psychology* 36: 56–71. [CrossRef]
- Byrne, Barbara M. 2011. *Structural Equation Modeling with Mplus: Basic Concepts, Applications and Programming*, 1st ed. New York: Routledge, ISBN 978-1848728394.
- Cao, Li. 2012. Differences in procrastination and motivation between undergraduate and graduate students. *Journal of the Scholarship of Teaching and Learning* 12: 39–64.
- Carden, Randy, Courtney Bryant, and Rebekah Moss. 2004. Locus of control, test anxiety, academic procrastination, and achievement among college students. *Psychological Reports* 95: 581–82. [CrossRef]
- Choi, Jin Nam, and Sarah V. Moran. 2009. Why not procrastinate? Development and validation of a new active procrastination scale. *The Journal of Social Psychology* 149: 195–211. [CrossRef]
- Chowdhury, Shamarukh F., and Timothy A. Pychyl. 2018. A critique of the construct validity of active procrastination. *Personality and Individual Differences* 120: 7–12. [CrossRef]
- Chu, Angela Hsin Chun, and Jin Nam Choi. 2005. Rethinking procrastination: Positive effects of “active” procrastination behavior on attitudes and performance. *Journal of Social Psychology* 14: 245–64. [CrossRef]
- Corkin, Danya M., Shirley L. Yu, and Suzanne F. Lindt. 2011. Comparing active delay and procrastination from a self-regulated learning perspective. *Learning and Individual Differences* 21: 602–6. [CrossRef]
- Deemer, Eric D., Jessi L. Smith, Ashley N. Carroll, and Jenna P. Carpenter. 2014. Academic procrastination in STEM: Interactive effects of strength threat and achievement goals. *The Career Development Quarterly* 62: 143–55. [CrossRef]
- Ellis, Albert, and William J. Knaus. 1977. *Overcoming Procrastination*. New York: Institute for Rational Living, ISBN 978-0451087584.
- Fee, Ronda L., and June P. Tangney. 2000. Procrastination: A means of avoiding shame or guilt? *Journal of Social Behavior and Personality* 15: 167–84.
- Ferrari, Joseph R., Juan Francisco Diaz-Morales, Jean O’Callaghan, Karem Diaz, and Doris Argumedo. 2007. Frequent behavioural delay tendencies by adults: International prevalence rates of chronic procrastination. *Journal of Cross-Cultural Psychology* 38: 458–64. [CrossRef]
- Ferrari, Joseph R., Kelly L. Barnes, and Piers Steel. 2009. Life regrets by avoidant and arousal procrastinators: Why put off today what you will regret tomorrow? *Journal of Individual Differences* 30: 163–68. [CrossRef]
- Fritzsche, Barbara A., Beth R. Young, and Kara C. Hickson. 2003. Individual differences in academic procrastination tendency and writing success. *Personality and Individual Differences* 35: 1549–57. [CrossRef]
- Gardner, John N. 1986. The freshman year experience. *The Journal of the American Association of Collegiate Registrars and Admissions Officers* 61: 261–74.
- Gareau, Alexandre, Melodie Chamandy, Kristina Kljajic, and Patrick Gaudreau. 2018. The detrimental effect of academic procrastination on subsequent grades: the mediating role of coping over and above past achievement and working memory capacity. *Anxiety, Stress, and Coping* 32: 141s–54s. [CrossRef]
- Gargari, Rahim B., Hossein Sabouri, and Fatemeh Norzad. 2011. Academic procrastination: The relationship between causal attribution styles and behavioural postponement. *Iranian Journal of Psychiatry and Behavioral Sciences* 5: 76.
- Goetz, Thomas, Madeleine Bieg, and Nathan C. Hall. 2016. Assessing academic emotions via the experience sampling method. In *Methodological Advances in Research on Emotion in Education*. Edited by Michalinos Zembylas and Paul A. Schutz. New York: Springer, pp. 245–58. ISBN 978-3-319-29049-2.
- Hall, Nathan C., Raymond P. Perry, Thomas Goetz, Joelle C. Ruthig, Robert H. Stupnisky, and Nancy E. Newall. 2007. Attributional retraining and elaborative learning: Improving academic development through writing-based interventions. *Learning and Individual Differences* 18: 280–90. [CrossRef]
- Haycock, Laurel A., Patricia McCarthy, and Carol L. Skay. 1998. Procrastination in college students: The role of self-efficacy and anxiety. *Journal of Counseling and Development* 76: 317–24. [CrossRef]
- Hensley, Lauren C. 2014. Reconsidering active procrastination: Relations to motivation and achievement in college anatomy. *Learning and Individual Differences* 36: 157–64. [CrossRef]
- Hess, Brian, Martin F. Sherman, and Mark Goodman. 2000. Eveningness predicts academic procrastination: The mediating role of neuroticism. *Journal of Social Behavior and Personality* 15: 61–74.
- Hoppe, Christina S. 2011. Academic Procrastination as a Predictor of Explanatory Style in College Students. Undergraduate. thesis, Carroll College, Helena, MT, USA. Available online: <https://pdfs.semanticscholar.org/f425/606a41a5859cb79ea9c98ae485ba75c60a61.pdf> (accessed on 29 September 2018).

- Howell, Andrew J, and David C. Watson. 2007. Procrastination: Associations with achievement goal orientation and learning strategies. *Personality and Individual Differences* 43: 167–78. [\[CrossRef\]](#)
- Janssen, Tracy, and John S. Carton. 1999. The effects of locus of control and task difficulty on procrastination. *Journal of Genetic Psychology* 160: 436–42. [\[CrossRef\]](#) [\[PubMed\]](#)
- Jellison, Jerald M, and Jane Green. 1981. A self-presentation approach to the fundamental attribution error: The norm of internality. *Journal of Personality and Social Psychology* 40: 643–49. [\[CrossRef\]](#)
- Kernis, Michael H., Bruce D. Grannemann, and Lynda C. Barclay. 1992. Stability of self-esteem: Assessment, correlates, and excuse making. *Journal of Personality* 60: 621–44. [\[CrossRef\]](#) [\[PubMed\]](#)
- Kim, Kyung Ryung, and Eun Hee Seo. 2015. The relationship between procrastination and academic performance: A meta-analysis. *Personality and Individual Differences* 82: 26–33. [\[CrossRef\]](#)
- Kim, Sowon, Sebastien Fernandez, and Lohyd Terrier. 2017. Procrastination, personality traits, and academic performance: When active and passive procrastination tell a different story. *Personality and Individual Differences* 108: 154–57. [\[CrossRef\]](#)
- Klassen, Robert, Lindsey L. Krawchuk, and Sukaina Rajani. 2008. Academic procrastination of undergraduates: Low self-efficacy to self-regulate predicts higher levels of procrastination. *Contemporary Educational Psychology* 33: 915–31. [\[CrossRef\]](#)
- Knaus, William J. 2000a. *Take Change Now: Positive Techniques to Break the Blame Habit*. New York: John Wiley and Sons, ISBN 978-0471325635.
- Knaus, William J. 2000b. Procrastination, blame, and change. *Journal of Social Behavior and Personality* 15: 153–66.
- Lee, Jie-Zhi. 2013. Active/passive procrastinators, metacognitions, and emotion variety after achievement feedback. *Bulletin of Educational Psychology* 45: 175–200.
- Liu, Wenling, Yangu Pan, Xiaoman Luo, Lixia Wang, and Weiguo Pang. 2017. Active procrastination and creative ideation: The mediating role of creative self-efficacy. *Personality and Individual Differences* 119: 227–29. [\[CrossRef\]](#)
- McAuley, Edward, Terry E. Duncan, and Daniel W. Russell. 1992. Measuring causal attributions: The revised Causal Dimension Scale (CDSII). *Personality and Social Psychology Bulletin* 18: 566–73. [\[CrossRef\]](#)
- Mezulis, Amy H., Lyn Y. Abramson, Janet S. Hyde, and Benjamin L. Hankin. 2004. Is there a universal positivity bias in attributions? A meta-analytic review of individual, developmental, and cultural differences in the self-serving attributional bias. *Psychological Bulletin* 130: 711–47. [\[CrossRef\]](#)
- Neumann, Roland. 2000. The causal influences of attributions on emotions: A procedural priming approach. *Psychological Science* 11: 179–82. [\[CrossRef\]](#)
- Onwuegbuzie, Anthony J. 2004. Academic procrastination and statistics anxiety. *Assessment and Evaluation in Higher Education* 29: 3–19. [\[CrossRef\]](#)
- Onwuegbuzie, Anthony J., and Kathleen MT Collins. 2001. Writing apprehension and academic procrastination among graduate students. *Perceptual and Motor Skills* 92: 560–62. [\[CrossRef\]](#)
- Özer, Bilge U, Ayhan Demir, and Joseph R. Ferrari. 2009. Exploring academic procrastination among Turkish students: Possible gender differences in prevalence and reason. *Journal of Social Psychology* 149: 241–57. [\[CrossRef\]](#)
- Park, Seung Won, and Rayne Sperling. 2012. Academic procrastinators and their self-regulation. *Psychology* 3: 12–23. [\[CrossRef\]](#)
- Perry, Raymond P., Nathan C. Hall, and Joelle C. Ruthig. 2007. Perceived (academic) control and scholastic attainment in college students. In *The Scholarship of Teaching and Learning in Higher Education: An Evidence-Based Perspective*. Edited by Perry Raymond and Smart John. New York: Springer, pp. 477–551, ISBN 978-1402057427.
- Pychyl, Timothy A., Jonathan M. Lee, Rachelle Thibodeau, and Allan Blunt. 2000. Five days of emotion: An experience sampling study of undergraduate student procrastination. *Journal of Social Behavior and Personality* 15: 239–45.
- Rothblum, Esther, Laura Solomon, and Janice Murakami. 1986. Affective, cognitive, and behavioral differences between high and low procrastinators. *Journal of Counseling Psychology* 33: 387–94. [\[CrossRef\]](#)
- Rotter, Julian B. 1966. Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied* 80: 1–28. [\[CrossRef\]](#)

- Sæle, Rannveig G., Tove I. Dahl, Tore Sørli, and Oddgeir Friberg. 2017. Relationships between learning approach, procrastination and academic achievement amongst first-year university students. *Higher Education* 74: 757–74. [CrossRef]
- Schraw, Gregory, Thersea Wadkins, and Lori Olafson. 2007. Doing the things we do: A grounded theory of academic procrastination. *Journal of Educational Psychology* 99: 12–25. [CrossRef]
- Seo, Eun Hee. 2012. Cramming, active procrastination, and academic achievement. *Social Behavior and Personality* 50: 1333–40. [CrossRef]
- Seo, Eun Hee. 2013. A comparison of active and passive procrastination in relation to academic motivation. *Social Behavior and Personality* 41: 777–86. [CrossRef]
- Sirois, Fuschia M, and Benjamin Giguere. 2018. Giving in when feeling less good: Procrastination, action control, and social temptations. *British Journal of Social Psychology* 57: 404–27. [CrossRef]
- Solomon, Laura, and Esther Rothblum. 1984. Academic procrastination: Frequency and cognitive-behavioral correlates. *Journal of Counseling Psychology* 31: 503–9. [CrossRef]
- Steel, Piers. 2007. The nature of procrastination: A meta-analytic and theoretical review of quintessential self-regulatory failure. *Psychological Bulletin* 133: 65–94. [CrossRef]
- Steel, Piers. 2010. Arousal, avoidant and decisional procrastinators: Do they exist? *Personality and Individual Differences* 48: 926–34. [CrossRef]
- Thibodeaux, Jordan, Aaron Deutsch, Anastasia Kitsantas, and Adam Winsler. 2017. First-year college students' time use: Relations with self-regulation and GPA. *Journal of Advanced Statistics* 28: 5–27. [CrossRef]
- Tice, Dianne M., and Roy F. Baumeister. 1997. Longitudinal study of procrastination, performance, stress, and health: The costs and benefits of dawdling. *Psychological Science* 8: 454–58. [CrossRef]
- Tinto, Vincent. 1993. *Leaving College: Rethinking the Causes and Cures of Student Attrition*, 2nd ed. Chicago: University of Chicago, ISBN 978-0226804491.
- Wang, Zhaobo, and Fred Englander. 2010. A cross-disciplinary perspective on explaining student performance in introductory statistics—What is the relative impact of procrastination? *College Student Journal* 44: 458–71.
- Weiner, Bernard. 1985. A theory of achievement motivation and emotion. *Psychological Review* 92: 548–73. [CrossRef] [PubMed]
- Weiner, Bernard. 2000. Intrapersonal and interpersonal theories of motivation from an attributional perspective. *Educational Psychology Review* 12: 1–14. [CrossRef]
- Weiner, Bernard. 2006. *Social Motivation, Justice, and the Moral Emotions*. Mahwah: Erlbaum, ISBN 978-0805855272.
- Weiner, Bernard. 2010. The development of an attribution-based theory of motivation: A history of ideas. *Educational Psychologist* 45: 28–36. [CrossRef]
- Wolters, Christopher A., Sungjun Won, and Maryam Hussain. 2017. Examining the relations of time management and procrastination within a model of self-regulated learning. *Metacognition Learning* 12: 381–99. [CrossRef]

