

Growth Mindset and Grit as Predictors of Licensure Examination Results

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Abstract

Though intelligence is vital for passing a licensure examination, certain measures of personality were deemed equally important as intelligence. This quantitative study examined growth mindset and grit to determine its predictive role in licensure examination results across several fields of profession. Data were collected via an online survey to 1,157 participants through crowdsourcing of examinees who recently participated in the 2019-2020 licensure examinations. Findings revealed a low relationship between growth mindset and grit of passers and deemed as independent constructs for every field of profession, yet controlling the number of attempts until passing the exam revealed a high relationship of increasing levels of growth mindset and grit. Average passing scores were also found to be inversely related to growth mindset and grit with respect to the frequency of attempts. Dissonance was observed in failed examinees with high levels of growth mindset but cast poor grit levels. The study concluded that licensure examination passers used a growth mindset and grit as an advantage over their intelligent peers. Though intelligence is an important construct for passing a licensure examination, the current study testified that growth mindset and grit were personality features that also predict the likelihood of success and failure in licensure examinations, especially for examinees not gifted with superb levels of intelligence. It was recommended to probe into other personality measures hindering the development of grit despite the growing mindset.

Keywords: *Licensure examination, Grit, Growth mindset, Personality assessment, Success predictors*

1. Introduction

In the Philippines, professional competence is measured by meeting the expectations of the policy through passing a high-stakes assessment—a licensure examination. This is perhaps one of the most dreadful moments when a fresh graduate has to devote his attention and focus during review to earn himself the most coveted license. Anecdotes often attribute the success of passing the licensure exam to the innate potential of the candidate, predominantly on the power of intelligence. Notwithstanding the vigorous observations where some individuals of identical intelligence fail while others succeed in the exam, some are less intelligent yet outscored the more intelligent ones. Does this mean that cognitive ability is not the absolute predictor of success or failure in taking licensure examinations?

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Literature in positive psychology indicated the role of personality traits as measures for achieving success. Grit, specifically, has recently gained attention in personality assessment as a better predictor of success than intelligence quotient (I.Q.). Defined by Duckworth *et al.* [1] as the "*passion and perseverance for long-term goals*," Stoitz [2] further elaborated the definition of grit as "*Your capacity to dig deep and do whatever it takes—even sacrifice, struggle, and suffer—to achieve your most worthwhile goals in the best ways*." Duckworth *et al.* [1] pioneered the study of grit whilst denoting its build-up using a growth mindset [3]. The growth mindset, on the other hand, is a perspective that "*basic abilities can be developed through dedication and hard work—brains and talent are just the starting point*" [4]. Assertions from the growth mindset and grit studies suggest that the attainment of success is a cultivation of experiences and effort in the long run of practice and resilience to failures until mastery is attained. These accounts in the field of psychology hold sufficient evidence that a growth mindset and grit could fill the gap in predicting success and failure in taking licensure examinations other than cognitive capabilities.

1.2. Literature and related works

According to Professional Regulation Commission (PRC) statistics, the consolidated percentage of passers across all fields of profession did not exceed 40% between 2013 and 2017 [5]. This was reflected in a local study conducted by Mendoza [6], who also noted a supply chain crisis and shortage of professional services in the country rising from 2010-2019, with the situation further worsened by the COVID-19 pandemic and the increasing number of migrating professional Filipino workers abroad.

Factors that influence the passing rate of licensure examinees were documented and established, yet research records were minimal. Some studies have been conducted to determine the predictors of passing a licensure exam, where the majority of the published research revealed a correlation between licensure examination results and the school's academic performance of the examinees [7][8][9]. These documented studies indicated that licensure exam results had a subtle relationship to intelligence. However, some accounts in the literature indicated that personality played an active role in predicting academic success. This was shown in a systematic review by Chritopoulou *et al* [10], who found a strong link between perseverance and academic performance.

Perseverance is one of the embodiments of grit, along with interest. In a grit scale developed by Duckworth *et al.* [1], perseverance of effort and consistency of interest were distinctly encapsulated in a 12-item assessment tool. Usage of the grit scale revealed that grit is a better predictor of success in a study conducted at military camps, spelling bees, and among college students [1]. Consistent with the findings of this study, accounts of grit in the literature body revealed a link between grit and academic outcomes as well as other personality identities such as self-efficacy and engagement [11][12][13][14]. Grit also demonstrated a positive relationship to the attainment of grade point average (GPA) [15] [16], while the literature review of Jiang *et al.* [17] inferred that "*gritty students undergo repeated practices during preparation, which accounts for their later achievement*". Anderson and Bergman [18] stated that grit is relevant in the attainment of higher achievements by virtue of insistence in chasing desired outcomes, which is a requirement for success. However, recent studies have shown that grit is not stable and that it fluctuates over time [19]. Furthermore, studies with grit in correlation to sociodemographic profile showed its association with age [20] [1], and gender [21] [22]. Inconsistent with these findings, some accounts indicate that grit does not affect achievement and performance in schools [23] [24], while it has nothing to

do with age but grows with time [25]. In a talk by Duckworth during TEDTalks, she mentioned that grit build-up can be assisted by the adaptation of a growth mindset [3].

The literature review revealed the influence of mindset on coping with setbacks [26] and the association of process outcomes [27]. A study showed that a positive mindset can improve the grades of STEM students along with their perseverance [28], while observations of a fixed mindset were common among students who struggled in collegiate courses [29]. However, the empirical evidence showed the malleability of mindset over time [30][31], though there are also some accounts indicating that mindset does not evolve, particularly from high school to undergraduate studies [32][33]. In the context of a growth mindset, the majority of the recorded studies showed a positive correlation with academic achievement [34][35]. The same result was corroborated by demonstrating a relationship between a growth mindset and achievement from the studies of Burnette *et al.* [36], Yeager and Walton [37], and Blackwell *et al.* [38]. It is important to note, however, that achievement is not solely attributed to one predictor, but to the interrelationship of a student's external and internal constructs. In a recent study using the coefficient of determination (r^2), findings revealed a higher attribution of achievement to a growth mindset equivalent to 11% [39].

The consolidated reviewed studies in the body of growth mindset and grit research indicated a positive effect on achievement although some findings also contradicted these conclusions. This displays a lack of consistent and reliable results in research testing, resulting in a questionable reflection of the truth. Moreover, no studies are trying to determine the predictive role of growth mindset and grit in the success and failure of licensure examinees. This study tries to fill the gap in the literature body by attempting to measure the grit level and growth mindset of licensure examinees who participated in the recently concluded 2019-2020 licensure examinations across different fields of professions in the Bicol Region, Philippines.

1.3. Objectives of the study

The main objective of the study is to investigate the predictive roles of growth mindset and grit in the results of licensure examinations across various fields of professions. Specifically, this study is intended to undertake the following specific research objectives:

1. Determine the extent of growth mindset and grit of licensure examinees in different fields of the profession;
2. Measure the relationship between grit/growth mindset to the corresponding number of attempts in taking the licensure examination; and
3. Deduce an implication of results to guide examinees on the best mode to pass the licensure examination.

2. Research Methodology

The research design, instrument, respondents, methodology, and analyses plan below were used and conducted by the researcher to derive the data and information relevant to answer the established research questions.

2.1. Design and instrument

Quantitative design through an online survey via crowdsourcing was used in this study. Consolidation of the data was done from March to November 2021 across all fields of professions that participated in a licensure examination in 2019-2020. The instrument used was a Google form with three sections: (1) respondent's profile; (2) grit scale; and (3) growth

mindset scale. The respondent's profile includes a survey on gender, the number of attempts at taking the licensure examination, the field of profession, the year when they last participated in the licensure exam, and the general average of passers. The grit scale was a 4-point Likert-type scale adapted from Duckworth *et al.* [1] with ten reversely-scored indicators of perseverance and interest pointers. On the other hand, the 4-point Likert-type growth mindset scale was adapted from Ingebrigsten [40] with six indicators that were also reversely scored. Analyses used descriptive and inferential statistics. The rationale for the use of crowdsourcing and virtual data collection was based on a limited face-to-face policy to contain the further spread of the COVID-19 virus amidst a pandemic². Moreover, the online platform was considered the best mode to gather data and cross-communicate with a large number of samples in a short period.

2.2. Respondents

Since the literature review indicated that growth mindset and grit change over time, it is, therefore, necessary to limit the respondents to the examinees of a recently conducted licensure examination; otherwise, growth mindset and grit will not fully reflect their predictive role in professionals who took the licensure examination several years ago. A total of 1,157³ respondents willing to participate in the study were tabulated by the Google form. These respondents participated in the licensure examinations last 2019-2020 in various professional fields like medicine (doctors, nurses, medical technicians, pharmacists), education (elementary and secondary school teachers), engineering (civil, electrical, marine, mechanical, chemical, geodetic), law (lawyers) and accounting (accountants, auditors). Online crowdsourcing was done within the Bicol Region, Philippines (Region V). The tally of participants revealed a total of 664 passers (57%) and 493 who failed (43%) their corresponding licensure examination.

Table 1. The number of respondents per field of profession

Field of Profession	Passed		Failed		Total
	Male	Female	Male	Female	
Education	87	128	114	98	427
Medicine	65	98	23	18	204
Engineering	103	34	56	22	215
Accounting	25	42	13	24	104
Law	44	38	51	74	207
Total	324	340	257	236	1157*

* Respondents were within Bicol Region, Philippines.

2.3. Research methodology for every objective and plan for analyses

For research objective 1, on the extent of growth mindset and grit levels, two Likert-type reverse-scoring instruments were used, such as the grit scale adapted from Duckworth *et al.* [1] and the growth mindset scale from Ingebrigsten [40]. These instruments were transcribed through a Google form sent to the licensure examinees. Descriptive and inferential statistics were used to treat the data. Descriptive statistics used mode and mean of proportions since the data generated from Likert-type scales were nominal. These central tendency measures were

² Protocol from Inter-Agency Task Force (IATF), the Philippines on limited face-to-face and travel restrictions.

³ Weeding out of participants was conducted based on the qualification criterion of recent participation in the 2019-2020 licensure examinations. A total of 461 participants were weeded out.

used both in measuring growth mindset and grit levels per field of profession and per frequency of attempt. Interpretation of the mean of proportions for growth mindset and grit was guided by the descriptive scale below.

Table 2. Growth mindset and grit levels based on the proportion range of the means of proportion for every indicator in the scale

M of Proportion Range	Grit Level	Growth Mindset Level
0.76 to 1.0	Extremely gritty	High growth
0.51 to 0.75	Most likely gritty	Growth
0.26 to 0.50	Not much gritty	Low growth
0.25 below	Not at all gritty	Fixed

For inferential statistics, Pearson r was used to correlate the growth mindset, grit, and average passing scores of the examinees for every field of profession and frequency of attempts. Also, this was done to determine if the degree of academic pressure for every profession significantly improved their levels of growth mindset and grit prior to taking the licensure examination.

For research objective 2, on the correlation between growth mindset and grit to the corresponding number of attempts, Pearson r was used to determine the interrelationship of the tested variables by correlating means of proportion in growth mindset and grit responses to the number of attempts. This was done both for passers and failed examinees to deduce the information from the accumulated data.

For research objective 3, on the implication of results, an implication analysis was conducted to derive the information from the processed data to establish a universal view for predicting licensure examination results using personality measures. This implication analysis was also conducted to provide personality patterns to help examinees pass the licensure examination. This is a technique performed by analyzing empirical data and evidence to come up with improvements to present procedures through review [41].

3. Results

The succeeding narratives were the findings deduced from the respondents who participated in the study. Tables and figures with corresponding discussions were integrated to process the data.

3.1. The extent of the growth mindset and grit of examinees in different fields of profession

Based on the consolidated data taken from respondents, engineering licensure examinees were found to top the ranking on grit level described as "Extremely Gritty," with the education field casting the lowest grit level yet still descriptively categorized as "Most Likely Gritty." Consistent with these quantitative findings were the corresponding high-growth mindsets of engineering examinees, while the lowest-growth mindset was accounted for in the field of medicine. Moreover, the engineering courses had the highest mean of the general average. [Table 3] shows the summary of the growth mindset and grit levels for every field of the profession of the examinees who participated in licensure examinations in the years 2019–2020.

Table 3. Growth mindset and grit of licensure examinees for every field of profession

Field of Profession		N	Extent of Grit		Growth Mindset		M of General Average
			M of Prop.	Desc.	M of Prop.	Desc.	
Passed	Education	215	0.58	Most likely gritty	0.61	Growth	76.87%
	Medicine	163	0.73	Most likely gritty	0.55	Growth	78.34%
	Engineering	137	0.77	Extremely gritty	0.88	High growth	78.67%
	Accounting	67	0.63	Most likely gritty	0.79	High growth	77.76%
	Law	82	0.72	Most likely gritty	0.83	High growth	78.63%
M			0.69	Most likely gritty	0.73	Growth	
Failed	Education	212	0.27	Not much gritty	0.77	High Growth	-
	Medicine	41	0.29	Not much gritty	0.59	Growth	-
	Engineering	78	0.49	Not much gritty	0.79	High growth	-
	Accounting	37	0.38	Not much gritty	0.56	Growth	-
	Law	125	0.53	Most likely gritty	0.83	High growth	-
M			0.39	Not much gritty	0.71	Growth	

The table revealed that the success of engineering courses was attributed to a combination of cognitive capabilities and personality measures. In other words, both intelligence and character were significant predictors for achieving passing scores in the field of engineering. A recent report on the study of grit testified to its growth by the extent of time [25], connoting that the long schooling of engineering students led to the development of their resilience, grit, and growth mindset over time. In fact, statistical data on literature showed that only 50% of the engineering students population will successfully graduate [42]; and of those, only the ones having higher I.Q. scores will finish school [43]. This subtly points out that engineering licensure examinees have superb levels of grit and cognitive capacities that outperform other professionals in the context of the present study. This confirms the combined power of intelligence and personality in achieving success in high-stakes assessments.

Further statistical analysis was conducted to determine the relationship between grit, growth mindset, and passing scores of licensure examination passers. Pearson r revealed a low correlation between growth mindset and grit ($r = 0.39$), indicating that these variables were separate constructs in achieving a passing score. Dissonance is observed in the data where passers have a positive perspective (high growth), yet their levels of action (grit) do not conform to their perception with respect to their chosen fields of profession. Despite existing accounts in the literature revealing a positive relationship between a growth mindset and grit [44] [45], the current study contradicts previously documented studies as evidenced by the emergence of dissonance. Nevertheless, a high relationship between grit and the general average ($r = 0.96$) was recorded. This signifies that higher levels of grit for every field of profession hone the cognitive abilities of the examinees until mastery of the content is attained relevant to passing the licensure examination. Consistent with previous studies, records have attested to the power of grit in achieving high test scores [15][16], which corresponds to the current study's findings. The data also implied that intelligence can be boosted by the power of grit, thus indicating that cognitive constructs are not stable and can be altered with the sustenance of effort. With respect to the participating professionals, it can be gleaned that their achievement in licensure examinations can also be attributed to higher levels of grit, as attested by the consolidated data. A moderate relationship between the growth mindset and the general average ($r = 0.51$) was also determined. In terms of a growth mindset, recorded studies have already confirmed its relationship to grit, which is thought to have an indirect but parallel effect on achievement [46]. Although the literature reiterates that

achievement stems from a growth mindset, the current study showed minimal association of achievement scores compared to a growth mindset since a gap was observed between the latter and the grit of the examination passers. Nevertheless, a growth mindset somehow affects the likelihood of passing a licensure exam, implying that, by some means, perspective does contribute to the possibility of developing cognitive capability, promoting the need for grit to develop optimal cognitive capacity. The collected data need to be investigated to fully understand the existence of a gap between a growth mindset and grit for every field of the profession of licensure examination passers.

Another set of statistical analysis was also conducted. A moderate relationship ($r = 0.54$) was observed for the growth mindset and grit levels of licensure examinees who failed the assessment. Though this positive association is viewed to be consonance with the existing studies, the mean grit level of failed examinees (0.39, not much gritty) significantly lagged behind compared to the grit level of passers (0.69, most likely gritty) ($p < 0.05$)⁴. Additionally, an intriguing finding showed a statistical no difference ($p > 0.05$)⁵ in the levels of growth mindset between passers and those who failed the exam. In contrast, the difference was that passed and failed examinees both exhibited the same levels of growth mindset, yet poor grit was observed in the latter, with high corresponding grit in the former. The data indicate that a growth mindset is an antecedent for grit to move forward, but the desirable translation to the required behavior of grit depends on the action and initiation of the individual. In other words, failed examinees of the licensure examinations have positive perspectives but lack control over transmuting their perception constructs into meaningful gritty behaviors, which can be elucidated by the absence of intrinsic motivation.

When the frequency of attempts was controlled, a significant pattern of data was observed in the growth mindset and grit levels. [Table 4] shows the summary of the growth mindset and grit for every corresponding attempt at taking the licensure exam.

Table 4. Growth mindset and grit levels for every frequency of attempt

Frequency of Attempts	N	Extent of Grit		Growth Mindset		M of General Average	
		M of Prop.	Desc.	M of Prop.	Desc.		
Passed	6 above	98	0.92	Extremely gritty	0.88	High growth	76.30%
	5	93	0.89	Most likely gritty	0.85	High growth	77.41%
	4	105	0.69	Most likely gritty	0.78	Growth	78.11%
	3	93	0.59	Most likely gritty	0.68	Growth	78.30%
	2	128	0.54	Not much gritty	0.62	Growth	79.08%
	1	147	0.49	Not much gritty	0.58	Low Growth	79.13%
Failed	6 above	103	0.31	Not much gritty	0.87	High growth	-
	5	78	0.39	Not much gritty	0.77	High growth	-
	4	82	0.28	Not much gritty	0.76	High growth	-
	3	49	0.41	Not much gritty	0.65	Growth	-
	2	94	0.44	Not much gritty	0.71	Growth	-
	1	87	0.52	Most likely gritty	0.49	Low growth	-

Comparison of the growth mindset and grit to the corresponding frequency of attempts of passers revealed a significant difference [$F(5,6)=16.35, p < 0.05$]⁶. This explicates the variance

⁴ Statistical addendum using z-score for proportions at a p-value equivalent to 0.00021 ($p=0.05$).

⁵ Statistical addendum using z-score for proportions at a p-value equivalent to 0.0946 ($p=0.05$).

⁶ Statistical addendum using analysis of variance (ANOVA) at a p-value equivalent to 0.0034 ($p=0.05$).

in growth mindset and grit scores in every attempt and is found to significantly increase, implying the power of toughness and resistance of passers despite the multiple failures in taking the examination (1<2<3<4<5<6 above). The data further suggest the development of the resilience of passers following their successive let-downs in taking the exam and the sustenance of their discipline to excel. However, licensure examination passers on the first attempt showed poor grit and a low growth mindset but with high achievement scores. This implies that their success in the licensure examination was attributed to their innate tendencies, particularly their cognitive abilities. On the other hand, licensure examination passers who repeated the exam relied on their growth mindset and grit aptitude as their advantage over intelligent peers, as shown by the corresponding higher growth mindset and grit on succeeding attempts yet low test average. Intelligence counts for passing high-stakes assessments on the first attempt, but a growth mindset and grit are the alternatives for passing the exam after successive failures on the test. These assumptions were proved accurate by the statistically high inverse relationship between achievement scores and grit ($r = -0.95$) and between achievement scores and growth mindset ($r = -0.94$). Though Table 3 indicated that growth mindset and grit showed a poor correlation in the field of profession, it was shown in Table 4 that the power of growth mindset and grit of passers is at its harmonious peak after repeated failures in the exam. Figures 1 and 2 are presented to visualize the growth of grit and mindset in every examination attempt.

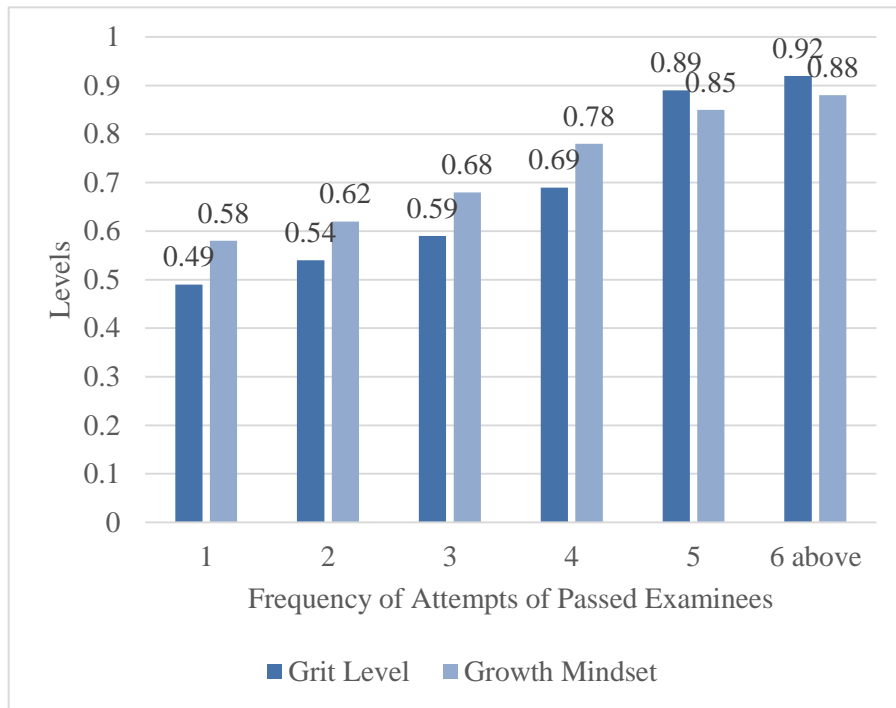


Figure 1. Grit, and growth mindset for every attempt of passed examinees

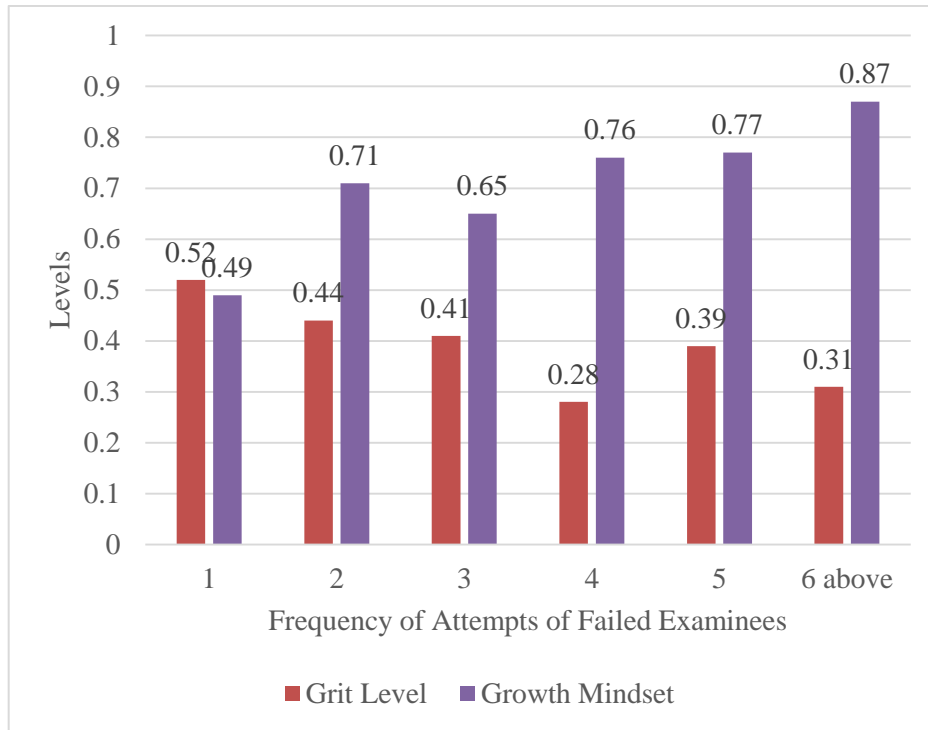


Figure 2. Grit, and growth mindset for every attempt of failed examinees

A comparison of personality measures between failed examinees and passers, vividly shows that the difference in their growth mindset is not significant ($p > 0.05$), while the cast of grit levels is shown to vary ($p < 0.05$). This is consistent with the findings in Table 4 indicating that a growth mindset is advanced among examinees but high grit is a plus for passers while poor grit is a manifestation of the dissonance of failed examinees. Moreover, this finding corroborates that a growth mindset is a catalyst for grit development, but it is solely the individual's accountability to initiate this grit progress. While growth mindset and grit are observed in passers of selected professions [Table 3], the dissonance between growth mindset and grit is more pronounced in failed examinees, as reflected by the frequency of attempts [Table 4] and [Figure 2]. Therefore, this supports the finding that a harmonious relationship between a growth mindset and grit is a powerful predictor of achievement in taking licensure examinations, particularly for those examinees who do not have innately superb cognitive capabilities to pass the exam.

3.2. The relationship between grit/growth mindset to the corresponding frequency of attempts in taking the licensure examination

The assumption of taking into consideration the number of attempts until passing a licensure examination was grounded on the documented study by Bibon [25] specifying the growth of grit over time. The frequency of attempts was considered as a periodic continuum where examinees' participation was tested to determine the degree of their growth mindset and grit in the face of multiple failures.

Taking into account the relationship between a growth mindset and grit to the frequency of attempts of passers, it can be gleaned that there is a high relationship among the tested variables. This was proven by the cast of r values directing a high relationship between attempts versus grit ($r = 0.97$), and attempts versus growth mindset ($r = 0.99$). This holds to the previously stated claim that improved levels of growth mindset and grit are indicators of passing the licensure examinations. Therefore, harmonious levels of improving grit and growth mindset are alternatives to the cognitive capacities of examinees in honing mastery levels to pass the examination in succeeding attempts.

Table 5. Relationship of grit, growth mindset, and frequency of attempts of licensure examination passers

	Attempts	Grit	Growth Mindset
Attempts	1		
Grit	0.970029	1	
Growth Mindset	0.989699	0.9785	1

To support the statistical claims in [Table 5], data in [Table 6] were also considered to understand the patterns of relationships in examinees who failed the licensure examination. In the table, the only value that showed a positive relationship to the frequency of attempts was growth mindset ($r = 0.90$). This is a clear suggestion that failed examinees have an increasingly positive attitude and viewpoint despite their successive failures in the exam. This was further supported by the data presented in [Table 4] and [Figure 2], thereby showing an increase in growth mindset with a corresponding increase in attempts. This suggests that failures on the examination did not easily dampen their perspectives and beliefs on passing the examination in future attempts. However, grit was shown to decline on multiple attempts as revealed by an inverse high relationship ($r = -0.81$), evoking a difference between what they positively believed and the level of their persistence. This is a clear indication that failures were detrimental to the stamina of their efforts, thus threatening their resilience to keep persisting. Despite the growth mindset cast, this is an example of the experienced dissonance of failed examinees with fragile discipline in committing to long-term goals and a lack of motivation to improve themselves. This observed dissonance is backed up by the inverse high relationship between growth mindset and grit ($r = -0.85$).

Table 6. Relationship of grit, growth mindset, and frequency of attempts of failed examinees in licensure examination

	Attempts	Grit	Growth Mindset
Attempts	1		
Grit	-0.81245	1	
Growth Mindset	0.904848	-0.84951	1

The disparity in the cast of grit was obvious, with a clear distinction between failed examinees and passers. Passers who went through multiple failures used grit as their advantage over intelligence. Grit is deficient to failed examinees although their level of growth mindset matched the level of the passers.

3.3 Implication of results to guide examinees on the best mode to pass the licensure examination

The basic connotation of the findings of the study implies that intelligence and personality are root ingredients in passing a licensure examination. For some with innate cognitive capabilities, they rely on their intelligence as a major element in passing the exam, particularly on their first attempt. Meanwhile, passers who went through a series of failures relied not on intelligence but on the endurance of effort and commitment to improve their cognitive skills. Gritty examinees were able to recover quickly from failure and take meaningful steps to try again. They do not consider failure a lasting situation. These inferences were supported by existing reports in the literature body asserting that hardworking individuals develop higher levels of cognitive capacity through academic achievement [47], academic goal commitment [48], and deliberate practice [49].

Despite the literature indicating a close relationship between a growth mindset and grit, this study demonstrated that having a higher growth mindset does not guarantee improvements in grit. As a result, growth mindset and grit were discovered to be unidirectional separate constructs for each field of profession. That is, improvements in the mindset of an individual in a particular profession would serve as an avenue for grit to improve, but the choice to become gritty relies solely on the disposition of the individual. This is a contradiction to the study of Park *et al.* [49], who noted that growth mindset and grit were mutually reinforcing, though they were described as distinct features. An attempt to understand the variance in the findings was attributed to the differences in the subjects of each study, where the former used adolescents while the current study used graduates. A thorough investigation is needed to testify to the truthfulness of this supposition. Nevertheless, a growth mindset seemed to be the springboard for the development of grit, although exhaustive studies need to be conducted to fully understand why failed licensure examinees did not acquire improved grit levels despite higher growth mindset scores.

Reviewing the indicators of growth mindset and grit instruments, it was perceived that grit is a behavioral construct whereas growth mindset is a positive viewpoint. Accordingly, "grit" is related to "mindset" [50]. When one perceives he cannot go through, trying is a painstaking initiative. Despite the fact that the mind is the foundation of behavior, some accounts in the literature coined the term "cognitive dissonance" to describe behaviors that do not conform to what someone believes [51]. Dissonance is the observed problem among failed examinees who manifested unparalleled levels of growth mindset and grit, indicating a lack of a harmonious relationship between mind (growth mindset) and behavior (grit). Therefore, experienced dissonance is an obstruction to passing a licensure examination, especially for examinees who have repeatedly failed the assessment. Changed behavior, or improved grit level, is needed to improve cognitive capabilities. Gritty behavior is manifested by the sustenance of effort to be committed to reviews, practice, and time devotion to improving one's level of cognitive abilities. Lack of grit deprives someone of dedicating themselves to helpful tasks regardless of their growth mindset levels. It is further implied that poor grit corresponds to potential failure in licensure examinations for examinees with insufficient levels of cognitive capabilities.

Although the study's implications emphasize the importance of grit, a growth mindset should be regarded as equally important as grit because it serves as the primary motivator for grit to grow. It is assumed that a lack of a growth mindset prevents the development of grit. Nevertheless, grit may or may not grow even with the improved levels of growth mindset, so the relationship is unidirectional and non-mutual for every field of profession and failed

examinees. Strong and synchronous relationships between a growth mindset and grit are only observed in passers who have gone through a series of multiple failures in taking the licensure examination, regardless of the field of profession. The data imply that a growth mindset and grit can become harmonious or discordant depending on the context of the experiences of licensure examinees. But for individuals with inadequate levels of intelligence, a parallel relationship between a growth mindset and grit is key for passing. While the current study revealed a corresponding high relationship between growth mindset, grit, and frequency of attempts of passers who experienced prior failures, this affirms the power of perspective and behavior as a stimulus to develop a sustained effort of trying despite the repetitive failures until successfully passing the licensure examination.

4. Discussion

The findings revealed that dissonance between a growth mindset and grit is a risk factor for licensure examinations, at least for those examinees who are not gifted with higher levels of intelligence. A growth mindset is the springboard of grit, but grit may or may not develop even with observable progress in a growth mindset. A missing link leading to dissonance serves as a mediator between a growth mindset and grit, obstructing grit's optimal development, and this should be carefully studied and documented. This was further proven by some studies in the literature indicating that a growth mindset showed an inconsistent relationship to levels of grit where the two variables were described as distinct features [52] [53]. So far, the present study relays the idea that examinees not gifted with superb I.Q. can rely on the consistency of mindset and positive actions of effort to achieve potential success in passing a licensure exam.

One characteristic observed from passers is the consistent development of grit, akin to a growth mindset over succeeding attempts. This implies that grit is not fixed and can change when faced with adversities and setbacks. In fact, the literature indicates that some individuals with higher levels of grit are more resilient when failing [54] and are more likely to succeed than less gritty ones. Furthermore, the "goal looms larger effect" [55] is testimony that individuals with sustained levels of motivation persevere more when they are closer to attaining their life goals. This supports the idea that improving grit levels can be sustained when examinees manifest behavior of resilience to setbacks and commit to achieving a passing score on the licensure examination. This also communicates the idea that grit is a major component for passing a licensure exam since this personality is a behavioral construct. Consonance with the existing literature, the improving motivation via goal looms larger effect also reveals a relationship between achievement and higher levels of grit [15] [16] [17] [18], which specifies that grit is a strong predictor of success. However, the current study does not diminish the power of intelligence to achieve victory in the licensure examination. In fact, intelligence is also a powerful predictor of passing an examination, especially on the first attempt. Accounts in the literature also indicated that intelligence can be attributed to success [56] [57], and was also proven to improve in relation to higher grit [58] [59]. Thus, both grit and intelligence provide significance in achieving success on a licensure examination, but with differences in contexts, particularly in relation to failure and frequency of attempts.

The intriguing aspect of the study lies in the failure of some examinees to develop grit despite higher levels of growth mindset—a dissonance. This characteristic sets the boundary between failed takers from passers where the relationship between their positive minds and actions of effort is not harmonious. Examinees without higher levels of intelligence will be

more likely to continue failing licensure examinations due to a lack of perseverance (grit) to hone their mastery despite having a growth mindset. Although records in the literature body hold sufficient evidence for the relationship between a growth mindset and grit [60] [61], this study revealed that dissonance between a growth mindset and grit is a potential threat to the success of passing a licensure exam. An article that coined the term "professional dissonance," indicated the experienced burn-out of professionals between values and tasks [62]. This draws attention to the poor performance levels attributed to failure and non-resilient characteristics hindering failed examinees in the tasks of review, practice, and other laborious activities that are deemed important for passing the examination, yet their mindset is sustained in putting a premium on the value of hard work. Dissonance becomes more vivid for examinees who have repetitively failed the examination with poorer levels of grit, yet the mindset is progressive.

The combined inferences rest on the assumption that growth mindset and grit are hard to study, and the present research has no unifying details about the relationship between the two variables. Likewise, no details were supplemented to study the dissonance as to why individuals tend to have poor grit levels despite improved mindsets. The current study helps decipher the predictive roles of growth mindset and grit levels of individuals who passed and failed the licensure examination. Thorough studies need to be conducted, particularly on the exploration of hindrances and obstructions to grit development and documented dissonance.

5. Conclusion

Findings affirmed that certain measures of personality, specifically growth mindset and grit, do contribute to predicting success or failure in licensure examinations. It also revealed that cognitive capacity is not the sole contributory factor in determining examination results but a whole-person factor. Hence, individuals who were not gifted with higher levels of I.Q. can rely on the power of their growth mindset and grit as their assets over their more intelligent peers to pass a licensure exam. A harmonious relationship between a positive perspective (growth mindset) and corresponding effort (grit) is a hallmark of potential success in licensure examination results, while dissonance between growth mindset and grit leads to prospective failure.

6. Recommendations

The current study holds promising results in the use of personality measures as an augmentation to the traditional thought of attributing licensure examination results to the power of intelligence. Growth mindset and grit have been shown to provide adequate grounds for predicting examination outcomes where dissonance distinguishes failed examinees from passers. Although the current study testified to the truthfulness of using these personality measures in predicting licensure examination results, certain limitations of the present study were established and should be given attention in similar research projects.

The results of the present study are only true for the licensure examinees of the Bicol Region, Philippines. A (1) similar study is recommended in other regions to establish a more inclusive result. Growth mindset and grit were the only personality measures tested, while literature has indicated that other personality characteristics also contribute to the success of long-term goals like self-control, engagement, and resilience. Therefore, the present study does not fully accredit success or failure in the licensure examination based on a growth mindset and grit. A (2) study investigating the role of other personality measures other than growth mindset and grit is recommended to understand the holistic chance of personality in

predicting licensure examination outcomes. Furthermore, the current study's findings only reflect the ability of a growth mindset and grit to predict licensure examination results; it does not consider the personality's long-term impact in their respective fields of profession. It is recommended to (3) conduct an impact study to determine the long-term effects of a growth mindset and grit in the workplace. The design and methodology of the current research focus on the quantitative aspects. It is recommended to make (4) alterations in the methodology by venturing into the qualitative view of the research to saturate the data of licensure examination takers. Moreover, the identification of the dissonance between growth mindset and grit is not fully explored in this study, and an (5) investigation of a mediating link between the tested personality measures should be thoroughly documented to understand the occurrence of poor grit despite high levels of a growth mindset.

7. Author's notes

This research paper was an offshoot of the original basic research report on Grit Assessment of Filipino Students-at-Risk of Dropping Out (SARDO) indexed in the DepEd Region V Office. The author approves the final version of the article for online publication.

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