

## Grit Assessment of Filipino Students at Risk of Dropping Out (SARDO)

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Received 2021-07-21; Revised 2021-09-02; Accepted 2021-09-03;

Published online: 2021-11-26

### Abstract

The main objective of this quantitative research is to assess the grit level of Filipino students at risk of dropping out (SARDO) to propose a predictive model in identifying those students who are more likely to quit in schools. Two research instruments were used in the study such as (1) 4-point Likert type grit scale, and (2) sociodemographic profile checklist. These were implemented through a survey to 103 identified SARDOs of 3 secondary schools in *Cagraray* Island, Philippines via delivery of their distance learning kit. Retrieval of the instrument was made possible through simultaneous submission of SARDO's learning materials. Descriptive and inferential statistics through mean, proportions, Analysis of Variance (ANOVA), post-hoc analysis, and Pearson r correlation were used. Mean and proportions revealed poor grit level of SARDO. A pattern of increasing grit level in every grade level was observed through ANOVA ( $p < 0.05$ ) as further supported by post-hoc analysis. Pearson r correlation showed no relationship to majority of sociodemographic data of SARDO's grit level connoting that privileges in life, age, and gender have nothing to do with the extent of grit. While causes for possibly dropping out showed moderate relationship to grit, grade level denoted a high relationship with levels of grit. Grounded on the implications of quantitative findings, it led to the proposal of Model ARMORED (*Assess, Rank, Mark, Order, Observe, Revive, Evaluate, Determine*) as a predictive model to identify SARDO. It is recommended to consider whole-child approach employing growth mindset instruction to boost SARDO's poor grit levels.

**Keywords:** *Assessment, Drop-out, Grit, Personality Measures, Students-at-Risk of Dropping Out*

### 1. Introduction

The existing model of Department of Education (DepEd) has primarily assessed dropping out in terms of environmental, economic, and physiological problems of a student. Leading to the development of department's Drop-Out Reduction Program (DORP), its mainstreaming primarily depends on which problems the school needs to target based on the consolidated reasons/facts for dropout. While some students experience the aforesaid problems yet still committed in schooling, there are also those who do not experience the problems yet decided to withdraw from school. Does this mean that our long known predictors for dropping out do not fully reflect the likelihood of quitting school? And if so, what dropping out predictor have we missed?

Accounted for 24.7% of the reasons for dropping out was attributed to lack of interest (The Challenge, n.d.) indicating the tendency of a failing motivation to continue schooling. Since interest is a vague and ambiguous issue to address, the trial to undertake the problem is predominantly lacking in the system. Thus, sustenance of interest to persevere in school has never been a major part of DORP, implying that problems related to interest are often neglected. Interest is a sub-scale of trait which means certain measures of personality affect drive for continuous schooling. Therefore, the present

study is significant by using personality measure as an augmentation to the existing traditional model to propose a more inclusive assessment approach that accurately predicts those students-at-risk of dropping out (SARDO). This fills the gap on the consideration of personality traits as one of the indicators in assessing SARDO. Flooding the literature is the use of high grit, as a personality trait, capable of predicting success in all sorts of super challenging settings. If literature revealed correlation between high grit and achievement, would this also mean that poor grit is characterized by those who are more likely to quit? Is grit the missing link in accurately predicting SARDO? These questions were addressed by assessing the grit levels of Filipino SARDOs in proposing a predictive model to identify students who manifest quitting behavior in schools.

### 1.1 Literature body of grit

It is said that one of the criteria for an effective educational system is looking to its drop-out rate along with the percentage of student absenteeism (Graeff-Martins *et al.*, 2006). Records and monographs spanning from 1927 attributed dropping out to potential mental inferiority (Fuller, 1927). Though Fuller (1927) associated dropping out to poor I.Q., Duckworth & Yeager (2015) proved that some measures of personality also play a pivotal role in the field of education. In Duckworth *et al.*'s (2007) work studying cadets in military camps, participants in spelling bees, and college students, they concluded that gritty individuals are more likely to persevere compared to less gritty ones. During TEDTalks, Duckworth (2013) shared that gritty students are significantly more likely to graduate as compared to other characteristics they could measure like family income, test scores, and even feelings of safety in school. Therefore, grit matters not only in military camps and spelling bees but more especially for SARDOs.

The growing body of literature in grit studies was originally pioneered by Duckworth *et al.* (2007). Defined as the “*perseverance and passion for long-term goals*” (Duckworth *et al.*, 2007), grit is a trait characterized by a strong desire and perseverance of effort for the realization of goals despite of setbacks and failures (James, 1907). Hanford (2013) cited Duckworth on further defining grit as “*the tendency to sustain interest and sticking with things over very long term*”. On the other hand, grit was described by Stoitz (2015) as “*Your capacity to dig deep and do whatever it takes—even sacrifice, struggle and suffer—to achieve your worthiest goals in the best ways.*” For many years, intelligence was considered as the finest forecaster of achievement (Gottfredson, 1997; Hartigan & Wigdor, 1989) yet recent development in the study of positive psychology accounted achievement to grit over I.Q. (Duckworth *et al.*, 2007). The study was initiated by the observation that some individuals of equal intelligence achieve more, or even outperform the more intelligent ones (Duckworth *et al.*, 2007).

Though there were previously documented studies on non-cognitive traits regarding the power of mindset, perseverance, and goal-driven behaviors (Levy & Dweck, 1998; Londoner, 1972), studies on grit gained attention to accurately predict achievement in all settings specially in schools. In the previous years, grit studies vis-à-vis sociodemographic profile revealed a correlation to age (Cupitt & Golsham, 2015), environment (Henry & Smith, 2004), and gender (Oklahoma City University, 2017) with females having higher grit levels than males (Jaeger, *et al.*, 2010; Aswini & Armita, 2017). In the field of education, studies on grit showed its correlation to motivation (Eskreis-Winkler *et al.*, 2014), achievement (Pate *et al.*, 2017), engagement (Hodge *et al.*, 2017), performance (Kelly *et al.*, 2014), learning strategies (Weisskirch, 2016), and post-

graduate training (Palisoc *et al.*, 2017). Nevertheless, there were also accounts indicating that grit does not affect achievement and performance in schools (Bazelais *et al.*, 2016; Ivcevic & Brackett, 2014).

These consolidated evidences from literature revealed that high grit is a powerful predictor of success in any challenging settings with high relationship to sociodemographic profile of individuals. Therefore, this study hypothesized the assumption that poor grit character leads failure as an indirect connotation grounded on the findings of literature body. This was tested by assessing the grit level of SARDOs in correlation to their sociodemographic profile. Operationally, this study defined grit as the sustenance of effort and interest of Filipino SARDO for finishing school.

### 1.2 Underpinnings of contextual data in consonance with grit

In the context of Philippine secondary schools, Amoroso and Bajo (2014) described the condition of dropouts as continuously rising from 2007 (7.45%) to 2012 (7.82%). The national ranking of regions placed *Bicol* region in 10<sup>th</sup> order having 5.5% of the total dropouts in 2012 statistics (Boyaci, 2017). One of the municipalities in the *Bicol* Region is *Bacacay, Albay* with almost 8,000 secondary school students. The municipality is divided into two land masses: (1) mainland Bacacay, and the (2) *Cagraray* island. Due to the geographical isolation of the *Cagraray* island, many shortcomings were faced by the struggling families to send their children at school. In fact, the School, Monitoring, Evaluation, and Adjustment (SMEA) in the *Cagraray* island secondary schools reported an increasing number of dropouts from 2018 to 2020 respectively with consolidated SARDO for school year 2020-2021 equivalent to 6% of the entire student population (N=115) (SMEA, 2021a). This record was comparatively higher than SARDO of mainland Bacacay secondary schools with combined percentage of 4% (SMEA, 2021b).

High drop-out rate and SARDO within the island schools was accredited to its culture where children from Geographically Isolated and Disadvantaged Areas (GIDA) were bonded to early responsibilities at home distracting their attention to pursue the need for schooling (Bibon, 2021). Family, finances, lack of interest, employment, illness, and others were the reported common root causes for dropping out (Philippines Statistics Authority, 2017). Using these data from Philippines Statistics Authority (2017), it can be inferred that grit plays a significant role in SARDOs as shown in the lack of interest profile having 24.7% (The Challenge, n.d.) among the registered reasons, hence no perseverance to finish studies. Interest and perseverance were the embodiments of grit (Duckworth *et al.*, 2007). For the meantime, the Department of Education coined the term SARDO to designate students who are more likely to stop or quit, and provide necessary interventions to keep them engaged in learning hence developing the DORP (DepEd Order No. 74, 2010). Furthermore, the meta-analysis studies of Christopoulou *et al.* (2018) suggested the need to examine the grit level of SARDOs to deliver educational reformers a wider perspective to determine the pattern of similarity among students who are also at risk of dropping out.

Based on the contextual data presented, it was obliquely shown that grit subtly affects the commitment of students in finishing school. Thus, this paper aimed to assess the grit for schooling of SARDOs to propose a predictive model for identifying students who are at risk of dropping out in schools. This was implemented from 3 Junior High Schools in the *Cagraray* Island, Philippines.

## 2. Objectives of the Study

The main objective of the study was to conduct grit assessment of Filipino SARDO to propose a predictive model that accurately identifies those students at risk of dropping from school. Implemented across 3 Junior High Schools in *Cagraray* Island, Philippines, the measurable specific objectives in relation to the attainment of the main objective were to:

- 1) assess the extent of grit of Filipino SARDO to determine their commitment for schooling;
- 2) measure the strength of relationship between grit level of SARDO and their corresponding sociodemographic profile;
- 3) obtain the educational implications of grit with respect to the findings of the study; and
- 4) propose a predictive model based from grit educational implications to help educational reformers accurately identify and address early problems of SARDO.

## 3. Research Methodology

This study employed quantitative research design. This was used to assess the extent of grit in schooling through statistical analyses of the data collected from 4-point Likert-type grit scale and sociodemographic profile checklist from SARDOs. After which, a predictive model was proposed through the implications of quantitative findings. In this section, participants of the study were described, and a detailed discussion of the research methodology for each objective was thoroughly presented.

### 3.1 The participants

The comparative high cases of SARDOs at 3 secondary schools in *Cagraray* island, *Bacacay* made it a good locale for the study. A total of 115 SARDOs were identified through purposive sampling technique. Guidance facilitators were held responsible for the identification of their school's SARDO following the qualification criteria as absenteeism, poor academic performance, undesirable behavior, disability/underlying illness, and early employment (Berto, 2019) as indicators for at risk of dropping out. Recognition of SARDO was kept blind from the researcher for ethical reasons on data collection and privacy. Coordination by the researcher to the identified SARDOs was moderated by the guidance facilitators of school locales.

Though the identified SARDOs were equivalent to 115, the successfully retrieved grit instruments were equivalent to 90% corresponding to 103 SARDOs willing to participate in the study. Table 1 showed the number of identified SARDOs for every grade level in schools.

**Table 1.** School Profile on Number of Enrollees with its Corresponding Number of Identified SARDOs

Schools	Grade Level	Enrollment	Number of SARDO		Total SARDO <sup>a</sup>
			Male	Female	
School A	10	174	3	4	7
	9	177	8	3	11
	8	151	5	6	11
	7	202	7	9	16
School B	10	161	3	5	8
	9	172	4	1	5
	8	219	4	2	6
	7	175	6	7	13
School C	10	114	3	5	8
	9	132	6	3	9
	8	156	2	4	6
	7	143	7	8	15
TOTAL		1976	58	57	115

<sup>a</sup>Retrieval rate is 90% equivalent to 103 grit instruments.

### 3.2 The research method for every specific objective

Answers obtained from the first research objective, extent of grit of Filipino SARDO in schooling, were gathered through a survey to 115 SARDOs identified in the school locales. This was measured and implemented by the distribution of 2 research instruments: (1) 4-point Likert-type grit scale; and (2) sociodemographic profile checklist. The grit scale has 10 indicators of perseverance and interest pointers and was adapted from Duckworth *et al.* (2007), while the sociodemographic profile checklist has 8 indicators of economic, environmental, and physiological characteristics of SARDO adapted from Berto (2019). Cronbach alpha analysis of the indicators in the instruments showed an internal consistency equivalent to 0.78 indicating an acceptable reliability (George & Mallery, 2003) of sample responses during its dry run. These instruments, along with letter of consent for parents, were distributed by the schools' guidance facilitators via the delivery of the distance learning kit to SARDOs, and were retrieved simultaneously to the submission of their answered learning materials.

For statistical treatment of data, answers in Objective 1 were obtained by the data collected from grit scale. Assessment of grit level was done by counting the proportions of 3 to 4 responses from the number of SARDO-participants per grade level (the choices "Not at all like me", "Not much like me", "Most likely me", and "Very much like me" were nominated by numbers 1 to 4). Proportion was used as an appropriate statistical tool since the nature of the data of grit scale is nominal. Nonetheless, means of proportions were utilized to merge the proportion of responses across all scale indicators, and grade levels. The resulting means of proportions were described by descriptively assessing grit. Table 2 showed the grit levels' descriptive equivalent for the means of proportions.

**Table 2.** Grit Level Based on the Proportion Range of the Means of Proportion for Every Indicator in the Grit Scale

M of Proportion Range	Verbal Scale	Grit Level
0.76 to 1.0	Very much like me	Extremely gritty
0.51 to 0.75	Mostly like me	Most likely gritty
0.26 to 0.50	Not much like me	Not much gritty
0.25 below	Not at all like me	Not at all gritty

Furthermore, ANOVA was also executed to test the significance of difference of means of proportions across all grade levels per school. This statistical tool elucidated and testified whether extent of grit of SARDOs across grade levels was similar or did vary. ANOVA testing was also backed up by a post-hoc analysis using *Bonferroni* correction at  $p=0.008$  level (six comparative events) to determine which data set caused the difference in the result of testing.

For the second research objective, strength of relationship between grit level and sociodemographic profile of SARDOs, correlation was employed. This was used to measure the degree of relationship between grit level (variable 2) and sociodemographic profile (variable 1) of SARDOs. Pearson  $r$  correlation test was administered as statistical tool. This was done by counting the frequency of responses in every indicator in the sociodemographic profile checklist in correlation to the means of proportions in grit scale of SARDOs.

For the third research objective, on educational implications of grit, an implication analysis was executed. It is a technique performed by analyzing empirical data and evidence to come up with improving present procedures through review (Lieberman & Horwich, 2008). In this study, this was done by finding the entry points of the grit research findings in relation to the current and traditional assessment methods employed in identifying SARDOs. Also, this implication analysis was carried in filling the gap between educational assessment practices and personality measures.

For the fourth research objective, on proposing a predictive model, this was done based on the results of implication analysis on quantitative findings. Its development was accomplished by using the grit findings of the current study as an augmentation in the existing models of Department of Education in identifying and assessing SARDOs.

#### 4. Results and Discussion

Upon identification of the SARDOs for every grade level in each school, the grit instrument was delivered and retrieved simultaneous to the distance learning modality of SARDOs. The succeeding discussions were the significant findings of the study.

##### 4.1 Extent of grit of SARDOs for schooling

The grit level of identified SARDOs was determined for every indicator in the grit scale. Table 3 showed the descriptive equivalent of the mean of proportions for every indicator.

**Table 3.** The Grit Level of SARDOs for Every Indicator in the Grit Instrument.

Indicators	School A	School B	School C	M of Proportions	Description
1. New ideas and opportunities distract me from schooling.	0.400	0.516	0.516	0.477	Not Much Gritty
2. Problems in school don't discourage me. I don't give up easily.	0.400	0.484	0.484	0.456	Not Much Gritty
3. I often set a goal for my studies but sometimes I choose to pursue a different goal.	0.300	0.226	0.226	0.251	Not At All Gritty
4. I work hard in school.	0.425	0.484	0.484	0.464	Not Much Gritty
5. I have a difficulty maintaining my focus in school that take more than a few months to complete.	0.225	0.419	0.419	0.354	Not Much Gritty
6. I finish whatever I started in school.	0.450	0.355	0.355	0.387	Not Much Gritty
7. My interest in going to school change from year to year.	0.350	0.355	0.355	0.353	Not Much Gritty
8. I will not give up my studies. I'm diligent.	0.300	0.484	0.484	0.423	Not Much Gritty
9. I am obsessed with a certain idea and work in school but later lost interest.	0.325	0.419	0.419	0.388	Not Much Gritty
10. I have overcome problems in school to conquer an important challenge.	0.425	0.452	0.452	0.443	Not Much Gritty
Average	0.36	0.4194	0.4194	0.3996	Not Much Gritty

Table 3 showed that majority of the indicators were categorically described by the SARDOs as “Not much like me” with a descriptive equivalent of grit to “Not Much Gritty”. In fact, the 0.399 average of grit level, with descriptive equivalent of “Not Much Gritty” connoted that SARDOs were not gritty in pursuing school. One indicator “*I often set a goal for my studies but sometimes I choose to pursue a different goal*” logged a descriptive equivalent of “Not At All Gritty” implying that SARDOs were easily distracted by whatever intervening factor/s diverting their focus. This result supported the assumption of Bibon (2021) who noted that students from far-flung areas have poor focus and attention in school due to their bondage in home-related responsibilities that loosen their stamina for continuous education. This was proven by probing on the economic status of SARDOs revealing that 88% to 93% came from a family with a monthly income of Php 5000 below, and with no daily allowance in going to school. This presumed that SARDOs’ life misfortunes tied them to premature duties, like early employment to sustain family needs, which detracted their long-term commitment for schooling (Xayavong & Pholphirul, 2018), thus resulting to poor grit. In Philippines, child labor is common with 69% of school children, ages 15 to 17, exposed to hazardous work

(Philippines Statistics Authority, 2015). These scenarios preoccupied SARDOs' commitment in school due to experienced setbacks that dampen their perseverance and interest, stemming to poor grit levels in finishing studies.

Grit level per grade level was also computed. Table 4 showed the mean of proportions of responses and their corresponding descriptive grit equivalent.

**Table 4.** The Grit Level of SARDOs across Three Public Secondary Schools in *Cagraray* Island

School	Grade Level	N	M of Proportions	Grit Level	Sig.	Post-hoc ( <i>Bonferroni</i> ) <sup>a</sup>
School A	10	4	0.450	Not Much Gritty	0.016	p>0.008 for G7 and G10 (H <sub>1</sub> ). H <sub>0</sub> for other events.
	9	11	0.436	Not Much Gritty		
	8	9	0.311	Not Much Gritty		
	7	16	0.288	Not Much Gritty		
School B	10	8	0.588	Most Likely Gritty	0.000	p>0.008 for G7 and G8, G7 and G10, and G7 and G9 (H <sub>1</sub> ). H <sub>0</sub> for other events.
	9	5	0.560	Most Likely Gritty		
	8	6	0.380	Not Much Gritty		
	7	13	0.207	Not at all gritty		
School C	10	5	0.467	Not Much Gritty	0.039	p>0.008 for G7 and G10 (H <sub>1</sub> ). H <sub>0</sub> for other events.
	9	5	0.240	Not at all Gritty		
	8	6	0.250	Not at all Gritty		
	7	15	0.200	Not at all Gritty		
Average		103	0.296	Not Much Gritty	0.000	

<sup>a</sup>*Bonferroni* Correction (post-hoc) has 6 comparative events for every school ( $p=0.008$ ), \* $p=0.05$

One surprising finding from Table 4 was the pattern of similarity on increasing grit level of SARDOs on succeeding grade levels. Though most of descriptive equivalents were categorized as “Not at all Gritty” and “Not Much Gritty”, the quantified means of proportions of grit level were continuously increasing. ANOVA test supported the statistical difference in the data ( $p<0.05$ ) indicating that grit levels across grade level did vary, revealing the Grade 10 SARDOs having the uppermost grit level in the pool of participants. Recent reports in the literature of personality assessment documented the concept of “*goal looms larger effect*” where a vivid increase in motivation was observed to individuals who were closer in achieving life goals (Higgins, 1997). These data, as supported by the existing literature, suggested that Grade 10 SARDOs managed to persevere more in schooling believing that the goal for finishing school is closer. Though further studies need to be conducted to attest the reliability of comparatively high grit levels of Grade 10 SARDOs, the result of the current study measured the validity of the accounts of Hollywood & Mitchell (2019) who noted that gritty individuals were more likely to finish schooling. Pointing out on the improved grit level of Grade 10 SARDOs, it cannot be accounted or described yet as higher grit level. Nevertheless, these reaped data suggested that grit grows over time. Duckworth and this present study dealt with the opposite extremities of grit level, the harmonious relationship and sufficing results of two studies signified and reflected the active role of grit in achieving success for finishing or quitting school.

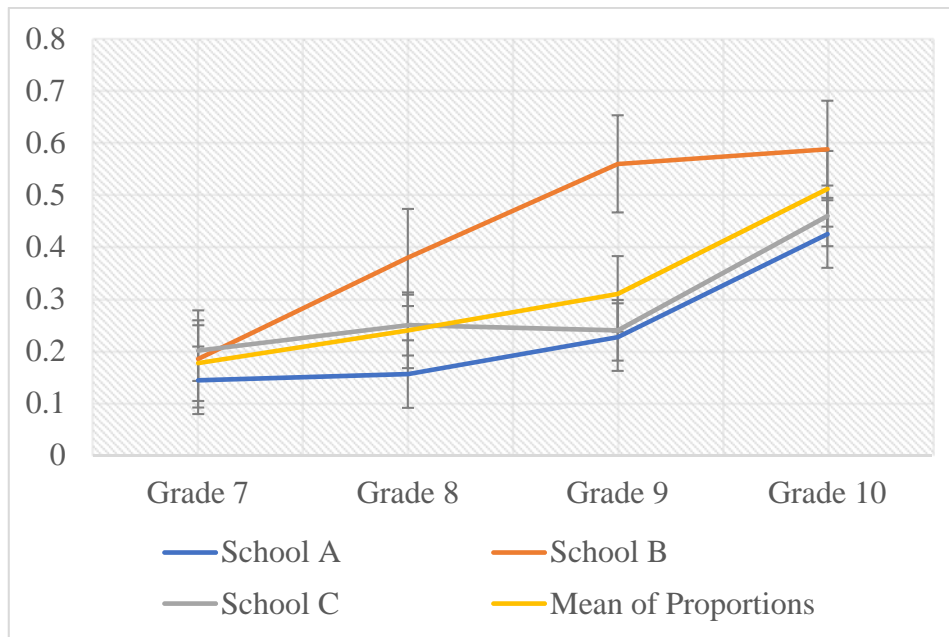


Post-hoc analysis through *Bonferroni* correction was used to determine the data set/s that caused the varying result of grit level within grade levels. Post-hoc analysis revealed the significant difference in the data sets particularly between Grades 7 and 10 across all possible comparative events. This indicated that grit levels of Grade 10 SARDOs were distantly related to the cohort of grit scores of lower grades causing the entire data set to be interpretatively different from one another ( $p < 0.05$ ). In addition, these analyses were supported by no statistical difference ( $p > 0.008$ ) on the grit level of SARDOs between Grades 8 and 9. This statistical no difference on grit levels of Grades 8 and 9 favored the result of superior grit level of Grade 10 SARDOs which was significantly higher than lower grade levels (see Table 3). Conversely, grit level of Grade 7 SARDOs was significantly lower ( $p < 0.008$ ) than the succeeding grade levels suggesting that these students were more likely to quit. This supposition was inversely supported by the aforementioned documented study on *goal looms larger effect* on increasing motivation over time (Higgins, 1997). On the contrary, Grade 7 SARDOs foresee education as a long-term task which undermined their will and spirit to persevere in schooling.

Though Higgins (1997) had proven that motivation becomes stronger when a person becomes closer to his goals, this literature proved the inverse connotation that grit level is poor when the goal is outlying from reality. This means that grit is not stagnant; that it can change with sustenance of insistence and determination. Furthermore, this implied and reflected the need to invest focus and industry to supervise Grade 7 SARDOs who have fragile grit level seeing their schooling endeavor as a long way to go. As a matter of fact, recent reports have shown that young learners have fragile personality and were more likely to quit school when they were not given enough attention and academic support (Ferdie, 2021; Johansson, 2019). The fragile personality of Grade 7 SARDOs contributed to their poorer grit levels conceivably leading to quitting school when not given proper intervention measures.

The means of proportions combined from 3 schools showed the continuous increase in the grit level of SARDOs from Grades 7 to 10. This testified that grit grows on closer attainment of goal, which further means that it is not fixed. Therefore, the use of personality measure, like grit, to predict and supervise SARDOs is an effective tool to monitor the commitment in schooling. To visualize the data growth of grit level of SARDOs as they moved closer to finishing school, Figure 1 on the next page was illustrated.

**Figure 1.** The Increase in the Grit Level of SARDOs on Succeeding Grade Levels



It was recommended to further investigate other factors that contributed to the growth of grit since presumption of its growth was primarily grounded on the pool of literature studies and limited findings of the current study. Investigations on grit level of Grade 7 and 10 SARDOs need to be thoroughly studied across other schools to generate a more inclusive and reliable research result.

#### 4.2 Strength of relationship between sociodemographic profile of SARDOs and their corresponding grit level

To test the degree of relationship between sociodemographic profile and grit level of SARDOs, frequency count (for nominal data) of SARDOs’ responses for every option in the sociodemographic indicators was correlated to their corresponding grit level. Table 5 showed the result of the Pearson *r* correlational test.

**Table 5.** Degree of Relationship Between the Sociodemographic Profile and Grit Level of SARDO in Each School

Sociodemographic Profile	School A	School B	School C	M	Relationship
Grade Level	0.809	0.834	0.792	0.812	High
Age	0.056	0.342	0.283	0.227	Low
Gender	0.005	0.120	0.114	0.080	None
Daily Allowance	0.215	0.028	0.212	0.152	Low
Causes for Possibly Dropping Out	0.556	0.429	0.592	0.526	Moderate
Family Type	0.312	0.182	0.324	0.273	Low
Mode of Transportation	0.192	0.216	0.398	0.269	Low
Family Income	0.232	0.271	0.198	0.234	Low

In Table 5, high correlation of grit level was observed to grade levels common to all 3 school locales. This was an indication that grit grows directly proportional to the grade level of SARDOs. Result of this correlational test was proven valid by the previously reported findings on the increasing grit levels of SARDOs on succeeding grade levels (Table 4). Thorough studies need to be conducted to validate the data demonstrating high relationship between grade level and grit. For the meantime, these findings affirmed that grit accumulated with time (grade level,  $r=0.812$ ) while correlation proved that it did not grow with age (age,  $r=0.227$ ). This result was contradictory to the conclusion of Duckworth *et al.* (2007) who noted that age was a significant predictor of grit.

Previous reports in the literature also indicated the relationship between grit and age (Oklahoma City University, 2017; Aswini & Amrita, 2017), and grit and gender (Cupitt & Golsham, 2015). Investigation on the records of this unparalleled results showed that the previously documented studies dealt with collegiate studies focusing on specific courses like engineering, military camps, and arts that were stereotyped by gender roles and age resulting to higher degrees of correlation. In this study, it was apparent that basic education was gender- and age-neutral which resulted to lower degrees of correlation between grit and age/gender profile. A study supported these findings where gender and age roles do not compensate for personality measures when unnecessary and irrelevant in the nature of work or context (Wolfgang, 2011). On the other hand, Duckworth *et al.* (2007) used grit scale that was holistic in dimension whereas the current study modified and contextualized the grit instrument in one-dimension for schooling.

Data also showed that privileges in life did not affect grit levels. In fact, family income and school allowance showed poor relationship to the grit level of SARDOs. Existing literature had shown how extrinsic motivation involving money can drive students to attend school (Jackson & Mackevicius, 2021), but the current study revealed that the use of such motivation was not a helpful tool to boost grit. In fact, Furnham (2012) narrated that motivation caused by money is not enduring; it is only temporary. As to motivational aspect, extrinsic factors can only improve the effort in short-term goals while grit deals with long-term commitment dealing with interest and effort –facets of intrinsic motivation. Therefore, the use of money to stimulate school children in going to school influences only their effort for short-term goals but do not compensate for the development of interest and long-term vigor in schooling, thus grit is not sustained. In fact, the data clearly showed that there were many privileged SARDOs who did not follow-through on their devotion to finish schooling. The same result was obtained following the mode of transportation suggesting that privileges in school distance and obstacles for going to school did not affect SARDOs' grit level.

While family type showed poor relationship to grit, causes for possibly dropping out like family problems, early employment, lack of interest, peer influence, sickness, and school problems showed moderate relationship to grit levels. This showed that life setbacks and misfortunes somehow affected the interest and perseverance of SARDOs. The existence of this moderate relationship implied that we need more of setbacks-related indicators to truly identify the strong forecasters of quitting school. Though some studies have shown that grit was not related and affected by life setbacks, the contradictory findings of previous and current research testified the conclusion of Stoffel & Cain (2018)

that understanding grit is difficult and its complexity is hard to measure. They recommended the need to further study grit and resilience. Nevertheless, this result of minimal association between grit and natural life impediments was true only to the context of the locale. Following the result of this study, it was important to note that setbacks in life somehow influenced grit of SARDOs, but life privileges did not guarantee improvements in the levels of their grit.

The body of literature and findings of the current study hold unparalleled results on determining the forecasters of grit. It was recommended to thoroughly venture on grit studies and understand if culture and locale affect degrees of grit. Also, teachers shall establish a devoted effort to address these causes for dropping out to improve the grit levels of SARDOs along with other intervening factors that indirectly affect commitment in going to school.

#### 4.3 Educational implications of grit derived from the findings of the study

Privileges in life do not make school children gritty. Though extrinsic motivation involving money can increase the likelihood of boosting determination, the effect is only short-term (Furnham, 2012). Educational reformers shall coordinate with parents by enlightening them that nourishing school children with wealth and increased school allowance do not make them engaged with long-term goals for schooling. Privileges in life shall not be seen by parents as a long-term motivational factor but rather a simple element to fill-up physiological needs. Also, teachers must develop a wider understanding of learning and commitment to children from motivational standpoint; from personality perspective. Whether SARDO or non-SARDO, education must cause a paradigm shift to students that finishing school is much more than students' ability to learn quickly and easily. It also comes with perseverance and interest. A close tie up between parents and teachers shall be established to work on sustaining the grit of students.

Since intelligence has been long proven and documented as a strong predictor of achievement (Gottfredson, 1997; Hartigan & Widgor, 1989), educational reformers shall consider personality factors, like grit, to determine the commitment stamina of the students for finishing school. This way, educational reformers and students will recalibrate the old definition of success where, oftentimes, success represents intelligence while failure denotes dumbness (Dweck, 2006). Emphasis in character and personality development must be given impetus especially for Grade 7 students who see education as a long-term goal. One of the goals of *Education For All* (EFA) is to “*achieve a 50% improvement in adult literacy, especially for women, and equitable access to basic and continuing education for all adults*” (International Bureau of Education, n.d). This educational campaign was believed to be attained when schools develop intervention plans for their SARDO through mainstreaming the DORP (DepEd Order No. 74, s. 2010) where majority of focal concerns deal with the previously documented causes for dropping out. DORP shall not only focus on these life setback issues around SARDO, but must be inclusive into wide-ranging elements of personality assessment as tool to predict students who are more likely to quit in school.

In fact, the use of life setbacks/causes of dropping out as sole factors for identifying SARDO were non-reliable considering some existing studies indicating that resilient students were not affected by family issues, peers, employment, poor grades, behavior, or even sickness (Widyastuti, 2017; Adebusuyi, 2018; Wu *et al.*, 2020). Resilience is synonymous to grit (Bshant, 2014; Perkins-Gough, 2013). Therefore, grit

assessment is a helpful and accurate tool to truly measure the personality of students on their interest and perseverance in finishing school. If grit truly signals greater chances of SARDOs to continue schooling, educators shall work on levelling off the grit level of students upon entry in schools. This must be part of educational assessment to determine how hard and long can students cope with academic standards despite the hold-ups and obstacles they encounter in their physical environment. Intervention strategies must be developed to address personality and will-driven issues of identified students who are less gritty. Devotion of schools to develop grit among students must be mainstreamed to help students set long-term goals and attention in achieving so.

So far, the best idea about structuring grit is something called growth mindset. It was developed at Stanford University by Dweck (2006), and it is the belief that learning is not fixed, that it can change with effort. This is manifested by the mentality on pursuing and working really hard to make a future a reality. Training SARDOs to have growth mindset will shift their personality of helplessness, and consider their foreseen academic failure as a non-permanent condition. Growth mindset approach for teaching can be done through reflection activities where SARDOs, along with non-SARDOs, must be given autobiographical and socialization sketches of successful people who started with tough experiences and failures. These life setbacks of successful people should demonstrate to students that their personal obstacles must not hinder them from pursuing their life goals, which will develop their grit in the long run.

One factor found to be detrimental for the development of grit is the engagement of school children to speedy life convenience (Bshant, 2014). Since education has encouraged the use of technology and internet, this taught the students to lose the sense of perseverance, and solid work ethics. Limited use of academic convenience must be monitored to students to impart to them the value of hard work and determination toward achieving long-term goals, which expands their grit level. Also educational reformers shall dedicate and invest effort to elucidate to school children the worth of finishing education, and how this ticket can head someone for a better future. Grit and sustenance of schooling determination will prevail if SARDO will see the benefit of finishing school. Therefore, schools must adjust their instruction to encompass the personality development of students related to grit, perseverance, self-control, interest, resilience, work ethics, and determination to mold the commitment of children to reach long-term goals not just in schools, but in life as well.

It was recommended to develop a school culture for character and grit build up which must be mainstreamed in education, through DORP, for a more inclusive instruction to SARDOs and non-SARDOs.

4.4 The proposed predictive model to help teachers and administrators address early problems of SARDO.

Grounded on the findings of the study, this proposed predictive model can be used to determine students manifesting poor grit level, thus categorized as SARDOs. This more precise predictive model is hereby proposed to help teachers and administrators identify those students who are more likely to quit school.

The data revealed that grit showed higher correlation to grade level and moderate relationship to the causes for dropping out. A predictive model integrating these two vital elements must be used to accurately identify SARDOs in a school. However,

identification of the grit level must serve as springboard prior to identification of the causes for dropping out since literature believed that resilient students do not exhibit quitting behavior despite life impediments (Adebusuyi, 2018). This indicated that some students experiencing these causes for dropping out might not display quitting behavior because of their strong determination and will-driven motivation to finish school. Therefore, the need to explicate grit level, beforehand, will be the first course for identifying SARDOs. These implications were used as the sole ground in the proposal of the predictive model to accurately identify SARDOs, and provide intervention measures to improve grit levels. Model ARMORED was proposed.

The Model ARMORED has 2 phases; the (1) Predictive Model, and (2) the Intervention Plan using growth mindset instruction. This predictive model encompasses 3 major steps (*Assess, Rank, Mark*) primarily dealing with grit level. On the other hand, the intervention plan deals with 4 steps (*Observe, Revive, Evaluate, Determine*) to address the problems of the identified SARDOs through whole-child approach.

In the ASSESS phase, the grit instrument must be used to level off the grit of the incoming students in the school, on the first day of classes, or during entrance exams. Following the same criteria measures, RANK the grit level of students who demonstrated grit levels of descriptive equivalents as to *Not At All Gritty* and *Not Much Gritty*. This can be done by computing the proportions of 3 to 4 responses and correspond the descriptive equivalent using the grit table. Students who exhibited poor grit level (*Not At All Gritty* and *Not Much Gritty*) must be MARKED as SARDOs, thus qualifying them for the intervention plan. Once SARDOs were identified, OBSERVATION through series of interview or home visitation must be conducted to determine the causes for possibly dropping out. Teachers may venture on factors and data previously reported by Department of Education like family problems, peer influence, finances, lack of interest, employment, illness, and others as root causes (Philippines Statistics Authority, 2017). These indicators showed moderate correlation to grit level denoting that attending to these internal and external causes can somehow improve grit level.

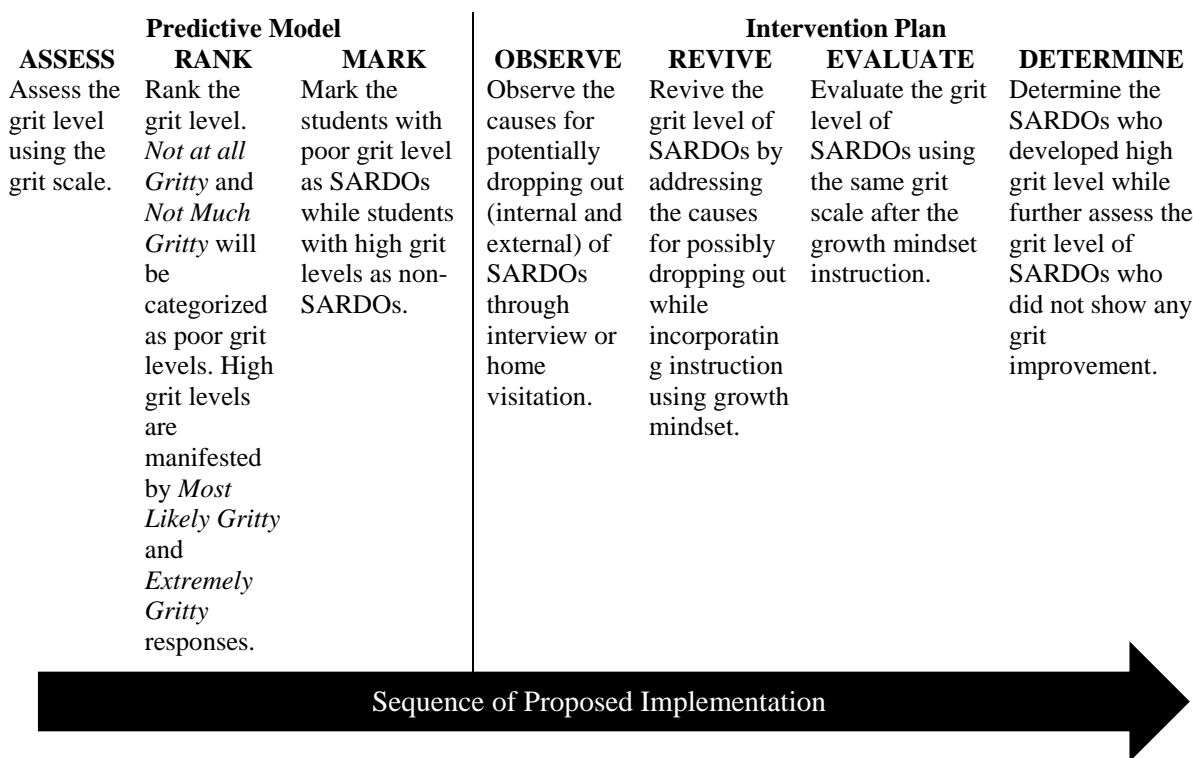
Alongside with internal factors, personality shall also be considered for observation since they also contribute in the power of determination in committing to long-term goals (Mellergers, 2018). Then, REVIVE the grit level by mainstreaming instruction integrating growth mindset in schools as an intervention plan/DORP to address personality and character issues for schooling. The normalization of growth mindset instruction must done through integrating autobiographical sketches of local or international figures who went through life difficulties and yet succeeded in schooling or in life. The use of role-modelling has been long proven to promote character and personality formation (Kenny *et al.*, 2003). This instruction must be assimilated across all learning areas by integrating socialization stories of these successful people for selected topics. This will serve as inspiration to students, especially SARDOs, to dedicate themselves in learning as they set up a person of emulation with the belief that problems in life are not enduring situations. This was further supported by the related study documenting the positive effect of autobiographies and socialization stories in the development of determination (Berdin, 2017), and grit in due course.

Also, instruction must teach students the concept of hard work by immersing them in real-life situations that will challenge their determination and willpower to resolve the

classroom-based issues (Bshant, 2014). This can be done by going back to the basics of learning like immersing in libraries instead of surfing internet, doing manual calculation

instead of using calculators, employ hand-based calligraphy instead of font-styled printed computer texts and others. Resilience and commitment to learn will grow, along with patience, which will eventually develop growth mindset, and boost grit levels. After a year of implementing the model ARMORED, teachers may EVALUATE the grit level of SARDOs using the same grit instrument to identify the effects of the intervention plan. After which, DETERMINE the SARDOs who have significantly improved grit levels, while the cycle of the model ARMORED must be kept continuous for SARDOs who showed no significant growth in grit. Figure 2 showed the predictive model and ways to address problems of the identified SARDOs.

**Figure 2.** The Predictive Model for the Identification of Students-At-Risk of Dropping Out (SARDO) and Their Corresponding Intervention Plan Integrating Growth Mindset Instruction



Testing grit level of SARDOs will fill the gap between commitment to continue in school and corresponding causes for dropping out. If intervention plans for SARDO will primarily focus on the old practice of allocating effort to address the previously known causes for dropping out, this will not bridge the gap of long-term motivation and school success. Dealing with drop-out problems in schools must be holistic and follow a whole-child approach where the totality of the child is a vital part of the diagnosis.

This model will work by providing guidance to teachers through the development of a toolkit encompassing directions on the usage of Model ARMORED. This can be applied year-round by the teachers via integration in instruction to both SARDOs and non-SARDOs for the sustenance and boosting of grit. Primarily beneficial to SARDOs for

boosting grit level, this model is further helpful to educational reformers on targeting personality measures in resolving issues on academic commitment, in general.

#### 4.4 Recommendations for further research

The study generally recommended further studies and adjustment on the following concerns: (1) methods of experiment, (2) grit comparison of SARDOs and non-SARDOs, (3) grit studies on senior high school and elementary schools, (4) effects of the Model ARMORED through action research, (5) repetition of method in other school locality, (5) other personality and character measures related to motivation, (6) grit build-up, (7) growth mindset application and other approaches that will improve grit, (8) grit assessment of drop-out students, and (9) hindrances of gritty students for finally quitting school.

### 5. Conclusion

The study was conducted to widen the effort of Duckworth *et al.* (2007) on grit studies by venturing on the other opposite extremity- contextually, poor grit levels of Filipino SARDOs. This study revealed poor grit levels of those at risk of dropping out in schools inversely validating the literature where high grit corresponds to achievement. Though the current study showed dissimilar result in correlating grit to majority of sociodemographic profile, this proved the need to further attempt studies related to assessing other factors leading to variances in grit testing. Nevertheless, the literature has also accounts of contradicting results in grit assessment particularly in student achievement.

In this study, poor grit level of Filipino SARDOs was determined via assessment. Though the literature body has indicated that high grit equates to achievement, the current study supplemented and verified the supposition that poor grit is to failure. This was supported by the poor grit level characterized by SARDOs. Precision in truly understanding and identifying SARDOs needs the employment of whole-child approach where personality measure, like grit, must be considered as a driving factor to sustain motivation for long-term commitment in finishing school. Model ARMORED was proposed to guide educational reformers in the use of whole-child approach in predicting SARDOs. Recalibration of instruction needing to integrate growth mindset approach is vital to boost poor grit levels. The result of the study is limited only to the students of the Cagraray island, Philippines. It was concluded that grit can be used as a strong predictor of school dropout.

### 6. Acknowledgements

The researcher would like to thank Gibert T. Sadsad, Regional Director of DepEd Region V, and Norma B. Samantela, Superintendent of SDO-Albay, for the approval of the study. Also, the researcher is grateful for the funding assistance of DepEd Region V under Basic Education Research Fund (BERF CY 2021).

Appreciation is also given to the TA committee of the region for polishing and improving the contents of the paper; Nick L. Bio, SEPS of SDO-Albay, for the guidance and coordination to the researcher; Edgardo Adalla, MT of Oas Polytechnic High School, for technical and moral support; Roy Nipas, Ruby Odsinada, Teodoro Buid, the principals of the school locales for accommodating the researcher; and most especially to Antonette Botial, Jenelyn Apinan, Carmie Bellen, and other teachers whose names cannot be mentioned individually for the effort and industry in coordinating with SARDOs.



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