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A STUDY TO ASSESS THE READINESS OF MEDICAL STUDENTS TOWARDS SELF-DIRECTED LEARNING AND ITS ASSOCIATION WITH ACHIEVEMENT GOALS AMONG MBBS STUDENTS IN A MEDICAL COLLEGE OF CHENNAI, 2017.

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ABSTRACT

Background: Medical education is expanding in such a rate that it is difficult to be covered in the 5 ½ years curriculum. Heutagogy or Self-directed learning is a concept which can help in matching with the ever-expanding medical knowledge. The present study was carried out to measure readiness for self-directed learning and its relationship with the student's achievement goals among eighth semester medical students in a tertiary care teaching hospital. **Methods and Materials:** Readiness assessment was carried out among 103 eighth semester MBBS students using Fishers' 40-item self-directed learning readiness score instrument after taking informed written consent. The 12-item Achievement Goal Questionnaire was used to measure the achievement goal orientation of the students namely: mastery-approach, mastery-avoidance, performance-approach, and performance-avoidance. Correlation test and multiple logistic regression was used to elicit relationship between readiness assessment and Achievement goal orientation. **Results:** The mean Self Directed Learning Readiness score was 141.97±22.6, with only 41students (39.81%) scoring more than 150 indicating high readiness. Among the different achievement goal approaches, mastery approach had the highest mean score, followed in the order of performance avoidance, performance approach and mastery avoidance. Mastery approach and Performance avoidance was found to be positively correlated with Self-directed Learning Readiness score which was statistically significant. **Conclusion:** The Self- directed learning readiness among medical students is low. The readiness towards SDL was correlating with the motivational factor, mastery approach and performance avoidance. This provides an indication to modify our curriculum and create medical education innovation programmes, which could kindle the mastery goal motivation factors.

Keywords: achievement goal orientation, self-directed learning readiness

INTRODUCTION

Medical education is expanding in such a rate that it is difficult to be covered in the 5 ½ years curriculum. The doubling time of medical education was 50 years during 1950 and it is expected to be 73 days at 2020. The concepts and facts one learn in their 20s become obsolete in their 30s. **(1)** The possible ways in which the system can cope with the curricular hypertrophy is to extend the course, which is an implausible solution. The other way is to attend regular CMEs (Continuing Medical Education) which is a plausible solution but not sufficient to cope up with the growing knowledge. Medical Council of India has envisaged developing an Indian Medical Graduate who is also a Lifelong learner. **(2)** Heutagogy or Self-directed learning is a concept which can help in matching with the ever-expanding medical

knowledge.

Self-directed learning (SDL) is the process in which the individuals take the initiative with or without the help of others, in determining their needs, formulating learning goals, identifying resources of learning, choosing and implementing learning strategies and evaluating learning outcomes. **(3)** SDL is the need of the hour. Medical Schools and the medical educator has the responsibility of not only inculcating the existing knowledge but also capacitate the students towards self-directed learning.

"Learning to learn" is not just a phrase. It is an art which has to be obtained over a period of time and influenced by various factors. Achievement goal is one of the factors which motivate a student towards learning, Mastery goals and performance goals are described in literature as the two forms of achievement goals which students are most likely to adopt when they engage in learning process. Mastery goal is described as one with intrinsic motivation of the student towards learning. Students with a high mastery goal orientation find learning interesting and important and would like to learn for having an understanding of the task. Performance goal is like an extrinsic motivation where students tend to learn to show off their capacity. Students with high performance goals learn to compete with their peers, to get rewards and avoid punishment or embarrassment. However, researchers have further partitioned these goals. Valence was used to divide performance goals into performance approach and performance avoidance goals. Students who want to perform a task better than their peers are said to have adopted a performance approach goal, whereas students who do not want to perform a task worse than their peers are said to have adopted a performance-avoidance goal. Similarly, mastery approach is when a student performs a task to master it and in mastery avoidance the students' concern is about not forgetting. **(4)** It is established that students' orientation towards learning whether it is mastery or performance has a say on the learning strategy they adopt. Hence it is considered important to understand the readiness of medical students towards self- directed learning and its relationship with the student's achievement goals. This study was conducted to assess the readiness of medical students towards self-directed learning, the achievement goal orientation of the medical students towards learning and the relationship between Self-directed learning readiness and achievement goal orientation.

MATERIALS AND METHODS

A cross sectional study was conducted among 8th semester medical students of a Government Medical College using a self-administered questionnaire. This group was selected because these students would have spent a minimum of 3½ years of medical education and they have sufficient learning experience to respond to the questions. In a study conducted among medical students in Pondicherry, the mean score for readiness towards self -directed learning 140 with a standard deviation of 24.4.**(5)** With 5% alpha error and 5% absolute precision, the calculated sample size is 92. Allowing non-response rate of 10%, the estimated sample size is 101. The list of students was obtained from the attendance register and was given serial number starting from one. The estimated sample size of 101 was chosen by simple random technique using computer generated random number.

Ethical approval was obtained from the Institutional Ethics Committee, Madras Medical College. The students were informed about the study purpose and written informed consent was obtained from the study participants.

The questionnaire had 3 sections. Section 1 includes socio-demographic details of the students. Section 2 includes assessment of self-directed learning readiness using SDLR scale developed by Fischer in 2011.This is a 40 itemed and has 3 components namely self-management, desire for learning and self-control. These scores are rated in a 5 point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).The readiness for SDL is categorized as high (>150 scores) and low (<150). **(6)**

Section 3 includes their achievement goal orientation of the medical students using the 12-item Achievement Goal Questionnaire (AGQ) **(7)** This

scale has 4 sub-components with a total of 12 items which will measure the achievement goal orientation of the students namely: mastery-approach, mastery-avoidance, performance-approach and performance-avoidance. This self-administered inventory is composed of four subscales with three questions each. Using a 7-point Likert scale, participants choose the answer which they feel most represents the extent to which a statement is true of them (1 indicates not at all true of me to 7 indicating very true of me) at the particular time. Higher scores indicate stronger orientation toward an achievement goal. Scores are obtained by averaging the Likert scaled responses for each of the 3-questions relative to each subscale, resulting in one score for each of the four subscales

The data were entered and analysed using IBM-SPSS version 16. Appropriate descriptive and inferential statistics was used. Chi-square test was used to elicit relationship between readiness assessment and gender, presence of a physician in family and area of residence. Correlation test and multiple logistic regression was used to elicit relationship between readiness assessment and Achievement goal orientation. A p value of less than 0.05 was considered to be significant.

RESULTS

The study was conducted among 103 students of 8th semester MBBS students. The average age of the participants was 21.06 years (SD ±0.591) and ranged from 21 to 23 years. The demographic detail of the study participants is given in Table 1. Most of the students were hostellers and were from rural locality. Almost 16.5% of the students had a doctor in their family. While the medium of language of 92.2% of the students was English, almost 80.3% had studied in State board syllabus in school.

Only 39.1% of the students had high readiness for self-directed learning. The mean SDLR soring was 141.9709 ±22.67 with 62(60.82%) students scoring <150 indicating low readiness depicted in Table 2. The mean sores in the 3 domains of self-management (SM), desire for learning (DL), self-control (SC) were 42.81 ±8.15, 44.03±7.60, and 55.11±9.92 respectively. Among the different achievement goal approaches, mastery approach had the highest mean score, followed in the order of performance avoidance, performance approach and mastery avoidance. It was observed that students with high readiness for SDL had a high mean score of mastery approach, performance approach and performance avoidance which was statistically significant.Mastery approach and Performance avoidance was found to be positively correlated with SDLR score which was statistically significant as shown in Table 3 and Figure 1(a-d).

It was observed that there was no significant difference of self-directed learning readiness among males and females students and day scholars and hostellers which is depicted in Table 5.Readiness for SDL was not associated with having a medical doctor in the family. Similarly it was not associated with board of studies and medium of instruction in their schooling. Logistic regression analysis showed that mastery approach and performance avoidance to be significantly associated with SDLR after adjusting for other factors. (Table 6)

DISCUSSION

In the present study, 39.1% of the students had high readiness towards self-directed learning, that is almost 4 out of every 10 medical students only had high readiness. Among the sub-scale, self-management had the least mean score and self-control the highest mean score. The readiness towards self-directed learning was correlated positively with Mastery approach and performance avoidance. High readiness towards SDLR was high among male students, belonging to rural locality, studied in Central board of school education and who studied with regional language as their medium of instruction in school. However these factors were not statistically significantly associated with high SDLR.

Extensive increase in medical knowledge can be matched only with self-directed learning. One of the goals expected out of an Indian Medical Graduate is to be a life-long learner. However with only 39.1% of the medical students with high readiness towards SDLR, makes it sceptical towards achieving this

goal. The least mean score in self-management suggests that this component has to be taken care of to improve the readiness towards SDL. The SDLR was found to be significantly associated with Mastery approach and Performance avoidance.In this study it was found that high readiness towards SDL was to be significantly associated with Mastery approach, Performance approach and Performance avoidance. That is if the goal of the student was focussed on attaining task-based competence or to avoid attaining normative incompetence to master in the task or if it was not to perform the task worse than their peers, they had high readiness towards self-directed learning. However, if the goal of the student was not to forget, then SDLR was low.

The readiness towards SDL among medical students is very much comparable across country. The mean SDLR score among medical students studying in a private medical college in Chennai was found to be (144.6 ±17.4), with 38% of the students had high readiness towards SDL. Highest readiness was observed among final year MBBS students (42.3%) followed by 1st year MBBS students (39.7%). **(8)** The SDLR among 4th semester medical students in Andhra Pradesh was found to be 36% **(9)** and it was found to be 30% among 5th semester students of JIPMER in Pondicherry. **(5)** The mean SDLR score in Andhra Pradesh study was 145.17±18.181 , whereas it was 140.4 ± 24.4 in JIPMER. **(5, 9)**. In contrary 60.2 % of the 1st year MBBS students of Manipal University had high readiness towards SDL with the mean score of 151.4. **(10)** A before and after study following introduction to a Partially Problem-based Learning in First Year Curriculum, conducted among 1st year medical students at Nepal, showed an improvement in the SDLR score from 152.7 to 157.3 which was statistically significant. **(11)** Similar comparison was done between 3rd year medical students who experienced the traditional curriculum with clinical exposure from the 2nd year of the course and among medical students who experienced a partially problem based (hybrid) curriculum with clinical exposure from 3rd year at Manipal University. The median total SDLR score in the hybrid curriculum was 132 (117, 137) whereas, in traditional curriculum, it was 137(128, 144) and the difference was found to be statistically significant. While 68% of the students in traditional curriculum had high readiness for SDL, only 55.7% among the hybrid curriculum had high readiness. One reason which was quoted by the author was an early exposure to clinical with bedside teaching in traditional curriculum expose the students to real life situations and may create more interest in the students for SDL than tutor designed, paper based PBL cases. **(12)** In all these studies, self - management subscale had the least mean score, which is a very similar finding in this study. SDLR mean score among nursing students of China was 148.19 ± 18.34 and was found to be significantly correlated with nursing competency measured using competency Inventory for Registered Nurses. **(13)** SDLRS total scores among first year nursing students in Australia, was 151.09. **(14)** In all these studies, there was no correlation between SDL readiness and presence of a doctor in family, board of education and medium of school instruction and current place of residence.

Motivation factor plays a significant role in readiness towards SDL. A study was conducted among Taiwanese nursing students to find the factors influencing SDLR. It was found that 22% of the variance in SDLR was accounted by motivation. Of the motivation factors, mastery goal was found to have a significant main effect on SDLR score compared to performance approach. **[15)** Mastery approach influencing SDLR is mediated through the learning process adopted. **(15)** Students with mastery goal adopt deep processing learning strategy whereas students with performance approach was related to exam performance and performance avoidance was related to surface learning. **(16)**

Thus it could be found that SDL is relatively low among the medical students. SDL varies with the type of medical curriculum adopted and it is also influenced by the achievement goal. If the learning of the students were to master the task, then there is high readiness towards SDL. Hence, it may be suggested that by a change in the evaluation pattern which is directed towards kindling the mastery goal

among the students, an improvement in SDLR may be expected. This indicates that further interventional studies are required with modified curriculum and evaluation pattern to find its impact on enhancing SDL.

CONCLUSION

The Self- directed learning readiness among medical students is low. The readiness towards SDL was correlating with the motivational factor, mastery approach and performance avoidance. This provides an opportunity to modify our curriculum and create medical education innovation programmes, which would kindle the mastery goal motivation factors. Targeted exercises and teaching strategies designed to promote mastery approach goal may improve SDL abilities.

Table 1: Socio- demographic characteristics of the study participants

Demographic characteristics		Frequency	Percentage
Gender	Male	47	45.6
	Female	56	54.4
Place of stay	Day scholar	15	14.6
	Hosteller	88	85.4
State of origin	Tamilnadu	92	89.3
	Other states	11	10.7
Residence locality	Urban	23	22.3
	Rural	80	77.7
Presence of doctor in the family	No	86	83.5
	Yes	17	16.5
Board of study	CBSE	11	10.7
	State board	92	89.3
Medium of study in school	English	95	92.2
	Regional language	8	7.8

Table 2: Descriptive statistics of SDLR score and achievement goal

SDLR domains	Mean	Standard deviation
Self-management	42.8155	8.15866
Desire for learning	44.0388	7.60150
Self-control	55.1165	9.92946
SDL	141.9709	22.67522
Components of Achievement Goal		
Performance Approach	4.0388	1.85610
Mastery Avoidance	3.7217	1.67651
Mastery Approach	5.1392	1.78808
Performance Avoidance	4.8026	1.49686

Table 3: SDLR versus different approaches of achievement goal

	SDLR	N	Mean	Standard deviation	p value *
Performance approach	High	41	4.6098	1.92340	0.010†
	Low	62	3.6613	1.72361	
Mastery avoidance	High	41	3.8537	1.68992	0.466
	Low	62	3.6344	1.67561	
Mastery approach	High	41	5.8211	1.19512	<0.001†
	Low	62	4.6882	1.97237	
Performance avoidance	High	41	5.3008	1.47724	0.003†
	Low	62	4.4731	1.42774	

*- Mann- Whitney U test performed; † - statistically significant

Table 4: Correlation between SDLR score and achievement goals.

	Spearman Correlation coefficient	p value
Performance approach	0.191	0.053
Performance avoidance	0.423	<0.001*
Mastery approach	0.269	0.006*
Mastery avoidance	0.078	0.432

* - statistically significant

Table 5: SDLR and other demographic characteristics

Demographic characteristics		High SDLR N(%)	p value
Gender	male	24(42.9)	0.490
	Female	17(36.2)	
Place of stay	Day scholar	6(40)	0.987
	Hosteller	35(39.8)	
Locality of residence	Urban	30(37.5)	0.373
	Rural	11(47.8)	
Presence of doctor in the family	Yes	7(41.2)	0.899
	No	34(39.5)	
Board of study	CBSE	6(54.5)	0.399
	State board	35(38)	
Medium of study in school	English	37(38.9)	0.710
	Regional language	4(50)	

Table 6: Multiple Logistic Regression between self-directed learning and other covariates.

Variables	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Gender	.523	.514	1.037	1	.308	1.688	.617	4.619
Place of stay	-.470	.717	.429	1	.512	.625	.153	2.548
Locality	-.462	.573	.651	1	.420	.630	.205	1.936
Doctor in family	.256	.635	.163	1	.687	1.292	.372	4.487
Board of study	-1.174	.757	2.409	1	.121	.309	.070	1.362
Language	-.953	.959	.989	1	.320	.385	.059	2.524
Performance approach	-.226	.138	2.680	1	.102	.798	.609	1.045
Mastery avoidance	.234	.173	1.818	1	.178	1.264	.899	1.775
Mastery approach	-.389	.148	6.898	1	.009	.678	.507	.906
Performance avoidance	-.398	.179	4.939	1	.026	.671	.473	.954
Constant	6.994	2.301	9.240	1	.002	1089.877		

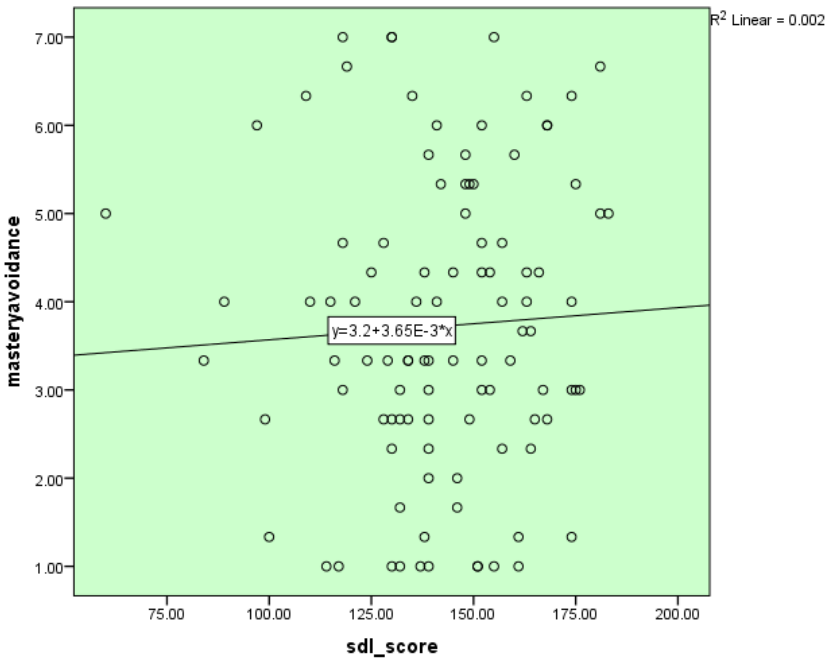

Figure 1a: Scatter plot between Self Directed Learning Readiness score and mastery avoidance

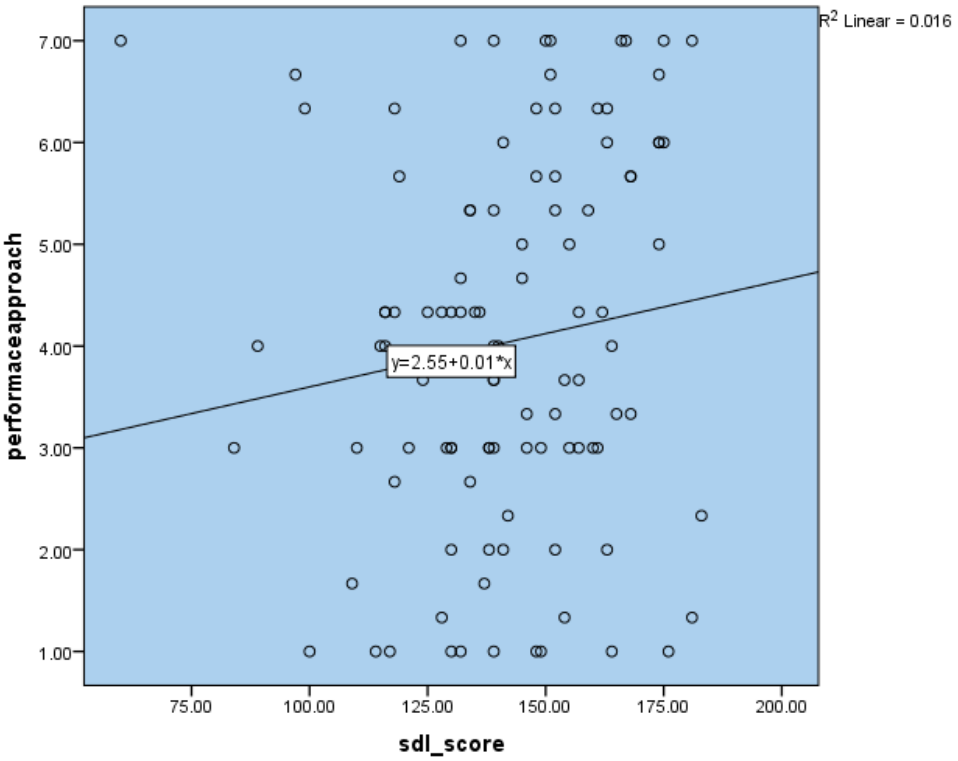

Figure 1b : Scatter plot between Self Directed Learning Readiness score and performance approach

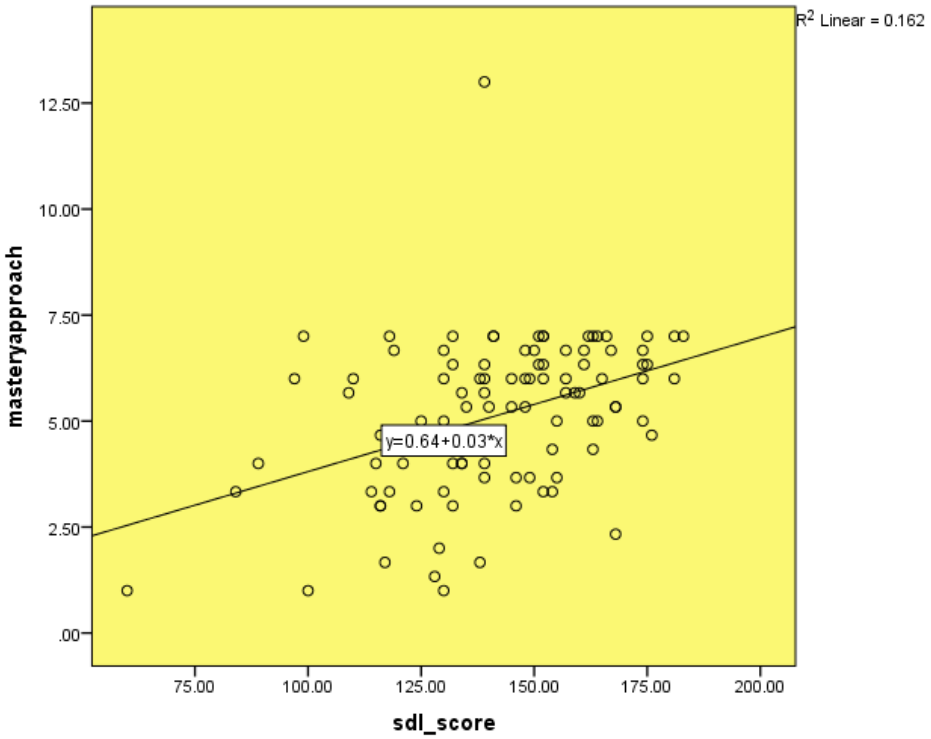

Figure 1c: Scatter plot between Self Directed Learning Readiness score and mastery approach

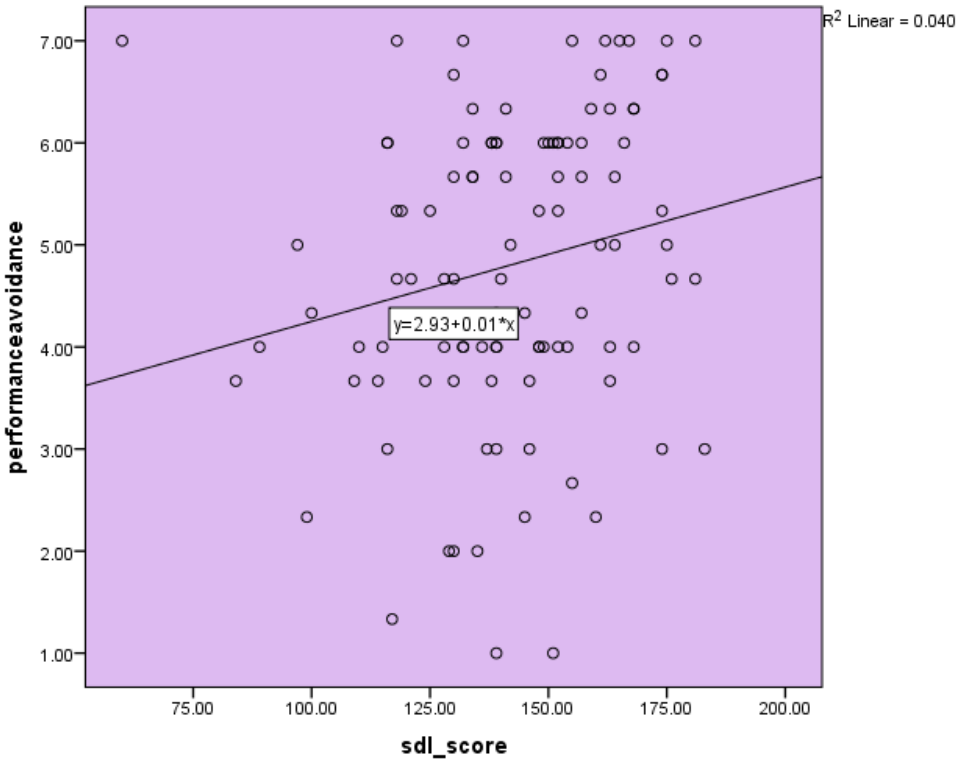

Figure 1d: Scatter plot between Self Directed Learning Readiness score and performance avoidance

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