

Mediating Role of Goal Mechanisms in Goal Core and Engagement Relationship for Mobile Fitness Application

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Abstract

This empirical paper fills the research gap by testing goal mechanisms on the extension of Goal Setting Theory (GST) as a mediator in the relationship between the goal core (GC) and individual engagement in mobile fitness apps. Data were gathered from a survey of 355 respondents among mobile fitness apps users filled the questionnaires for this study. The paper analyzed data using structural equation model (SEM) and specifically the partial least square-based structural equation modelling. Two stages of analysis were conducted: the measurement model and the structural model. The results indicate that goal mechanisms have a significant impact on individual engagement in which it has provided enough evidence to support the hypothesis that the individual with goal mechanisms in the mobile fitness apps engaged better. Consistently, goal mechanisms significantly mediate the relationship between goal core and individual engagement. The paper is expected to contribute in threefold: increase the literature database regarding the antecedents of goal mechanisms on Goal-Setting Theory (GST), change the way we perceive the relationship between goal core and engagement by introducing goal mechanisms as a mediator and lastly, assist the guidance for fitness trainer and centre on engagement strategy decisions and provide the basis for future researchers.

Keywords

Goal Mechanisms, Goal Core, Engagement, Mobile Fitness Application

Introduction

Goal mechanisms is an essential aspect in the extension of Goal-Setting Theory (GST) for performance and engagement studies. This attributed suggested by Locke and Latham (2002;2006) and Locke (1968) with their pivotal works that linked goal mechanisms to engagement. Subsequently, the concept attracted numerous scholars' interests in the developed countries (Ramshe et al., 2019; Medlin and Green Jr, 2009), developing countries (Tondello et al., 2018; Smith et al., 2017), organizations (Swarnalatha and Prasanna, 2018; Sholihin et al., 2016) and healthcare (Khuhro et al., 2019; Smith et al., 2017). The study of goal mechanisms attracted the eye of scholars and is actively studied in the marketing and information technology disciplines over a year. However, there is a limited studied have been conducted to investigate goal mechanisms as the mediator (Burns et al., 2019; Tondello et al., 2018). These two researches only investigate goal mechanisms as direct relationships but not as mediator. Goal mechanisms refer to an ability to justify the effect of specific goals from goal core and act as the action plan through the implementation of strategy and planning that leads to a greater effort in engaging activity

(Locke and Latham, 2006). Goal mechanisms has significant potential as a mediator predictor of engagement behaviour in mobile fitness apps (Lim and Noh, 2017). An individual with high level of goal mechanisms tend to engage with their activity. Furthermore, studies have associated individual goal core with high engagement (Motel, 2016; Tanes and Cho, 2013; Smith et al., 2013). Consistently, many studies from scholars have indicated that goal mechanisms have a positive effect on individual engagement behavior (Arraya et al., 2015; Smith et al., 2013). However, little is known about goal mechanisms as a mediator between goal core and engagement.

Therefore, the current paper has mainly two objectives: (a) to provide additional empirical evidence supporting the relationship between goal mechanisms and engagement and (b) to validate the mediating roles of goal mechanisms on goal core and engagement relationship. Findings are expected to contribute in literature expansion regarding the mediator of goal mechanisms and provide the guidelines for fitness centre and trainers. Data were collected from Malaysian gen y mobile fitness apps user in the fitness class centre in Malaysia setting.

This paper is structured as follows: first, it provides the introduction, literature review regarding goal core, goal mechanisms and engagement, the relationship among variables and hypothesis. Research method used also is described followed by results and discussion. Finally, conclusion, managerial implications are discussed.

Literature Review

Underpinning Theory

Self-Determination Theory (SDT) is viewed as one of the general theories of motivation that supports the dynamics of human needs, motivation and well-being within the immediate social context (Deci and Ryan, 1985). This theory justified how human achieve their goals or perform activities based on their psychological or cognitive responses which constitute the difference form of motivation on a continuum (Deci and Ryan, 1991). Also, it posited that the theory intrinsically motivated people have the highest level of self-determination that undertake behaviours for reasons of interest and inherent satisfaction (Ryan and Deci, 2000). Previous research found that the constructs of Self-Determination Theory (SDT) were a good predictor and support for the justification of human behaviour (e.g., Weinstein and Ryan, 2010; Hagger and Chatzisarantis, 2009; Ryan and Deci, 2006; Ryan, Rigby and Przybylski, 2006). The theory proposed that the relation between intrinsic forces variables and engagement, which is seen as outcome through the mediator by behaviour factors.

On this premises, the paper uses the Self-Determination Theory (SDT) to introduce goal mechanisms as mediation construct because it supported the justification of indirect effect on target behavior through the intervene variable role (Hagger and Chatzisarantis, 2009; Standage, Duda and Ntoumanis, 2003; Hagger et al., 2002) as well as supported the justification of direct effect on behavior (Lavergne et al., 2010; Sheldon et al., 2003; Green-Demers, Pelletier and Menard, 1997; Grolnick and Ryan, 1987). Therefore, this paper refined the relationship between goal core (independent variable) and engagement (outcome) by introducing goal mechanisms (indirect variable) as a mediator.

Goal Mechanisms

The study of goal mechanisms is mostly not specifically studied on individual but focused on the organizational-level analysis (Bipp and Kleingeld, 2017; Tanes and Cho, 2015). Goal mechanisms explains the effect of specific goals from goal core and focuses on the action through the implementation of strategy and planning that leads to a greater effort in achieving the actual behaviour in organisation (Locke and Latham, 2006). On the contrary, it is vital to understand how goal mechanisms effect the outcome from an individual perspective although there is a justification from organisational level (Tondello et al., 2018; Rodrigues et al., 2017). Hence, literature has underestimated the impact of goal mechanisms from individual perspectives. Swarnalatha and Prasanna (2012) studied goal mechanism from individual through employee perspectives and identified that goal mechanisms helped employees to engage with their organization task.

However, these studies have not put emphasis on the impact from individual perspectives and have not shown the framework can be used among fitness centre and trainer to improve the engagement through goal mechanisms by using employee-level. Studies of goal mechanisms are still very few and most of the existing research studied goal mechanisms as independent variable but not as mediator. Recent research by Bipp and Kleingeld (2017) has recommended that goal mechanisms should be studied as a mediator since the majority of scholars studied it as an independent variable. They also concluded that goal mechanism serves as attention toward goal-relevant activities that affect individual behaviour. Therefore, analysis of goal mechanism and the role as the mediator are crucial. Extant literature on goal mechanisms did not justify comprehensively on the individual perspectives especially in mobile application.

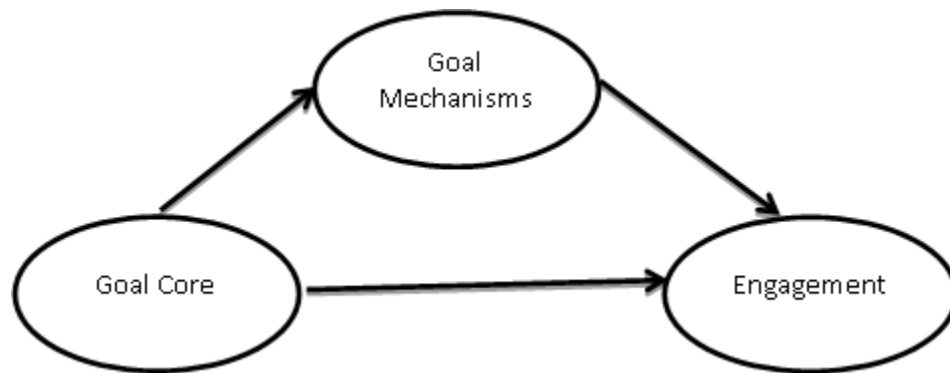


Figure 1. The Conceptual Model of the Study

Source: The authors

Conceptual Model

On the basis of Goal-Setting Theory (Locke and Latham, 2002) as well as previous literature and research, the conceptual model was proposed for this paper. The Self-Determination Theory (Deci and Ryan, 1985) supports the link between goal core, goal mechanisms and engagement which forms the model. It is one the contribution which is the introduction of goal mechanisms to mediate the relationship between goal core and engagement. The Self-Determination Theory (SDT) supports the mediation relationship among variables. Figure 1 shows the conceptual model of the paper.

Goal Core and Goal Mechanisms

An individual with clear, conceivable and specific goal core, have the ability to track the progress of goal achievement that reduces the ambiguity that allows focusing on precise action and behaviour that is related to goal achievement (Miner,2003). Consistently, scholars have claimed that goal mechanisms justify the effect of goal core through the implementation of strategy and planning that leads to a greater effort in achieving the actual behaviour (Locke and Latham, 2006).The group of scholars agreed that goal mechanism positively improved the target behavior once goal core is identified (Tasa et al., 2013; Zetik and Stuhmacher, 2002), it influences individual behavior and decision making (Latham and Locke, 2006; DeShon et al., 2004) and influences behavioral and attitudinal change (Madera et al., 2013). Although goal mechanisms are significant factor that justify goal core, it's relationship by looking an individual perspective has not been comprehensively studied (Ramshe et al., 2019; Tondello et al., 2018). However, given the significance finding from previous research, it would appear that the examination of the relationship between goal core and goal mechanisms would be suitable development of body of literature knowledge.

Goal Mechanisms and Engagement

Engagement conceptualization has been attracting among practitioners as well as academicians in recent years. In marketing literature, engagement is defined as the approach to create, build and enhance individual relationships (Brodie et al., 2013) and as an essential strategy to build a sustainable competitive advantage (Brodie et al., 2013; Van Doorn et al., 2010). Engagement is performed when an individual has clarity on goal core and goal mechanism as a channel to translate goal core as a strategy and action (Locke and Latham, 2002). Lorraine et al. (2013) found that goal mechanism played an essential role in influencing engagement among patient and pharmacist in health care. Consistently, Arraya et al. (2015) studies on the effect of goal core factors on goal mechanism and engagement on a mobile fitness application verified that individual goal mechanism positively influences their engagement on mobile fitness app because an individual who has excellent skills and knowledge would motivate them to engage because of the actual behaviour as the key of both motivation and ability. This discussion reveals that there is a relationship between goal mechanisms and engagement.

Goal Core and Engagement

The individual evaluation on goal core towards engagement occurred when the individual has a specific goal rather than general in performing the target behaviour (Locke, 1996). By having specific goal core, it can decrease ambiguity and energises which leads the greater effort to deliver specific objective (Locke and Latham, 1990). They added that, in order to understand it clearly, there is a need for better understanding of diversify relationship between goal core and engagement studies. Medlin and Green Jr (2009) found that goal core is positively related to employee engagement in organisation performance. Tanes and Cho (2013) examined the learning outcomes of goal core towards engagement in the video game. They found that goal core engaged the player during playing a video game which yields greater outcomes and plays repeatedly. However, Bipp

and Kleigeld (2019) found that there are only small differences in goal core influence between employees with goal core for engaging with the job and those who were not set the goal core and did not find any changes in job satisfaction and engagement. Similarly, Motel (2016) found that goal core only explained the engagement among female minority leader respectively but not for male. In addition, studies have seldom used goal mechanisms as mediator to the relationship between goal core and engagement (Lim and Noh, 2017; Bueno et al., 2008). Thus, the discussion indicates that goal core influences engagement as well as mediates the relationship between goal core and engagement.

Methodology

Design

This paper was a descriptive cross-sectional design and hypotheses deductive approach. It employed a survey method through self-administered questionnaire to collect data from January 2019 to April 2019. Data were collected from Malaysian Gen Y mobile fitness application user from fitness centre that fall within the ages of 21 – 35 years old. Prior to data collection, pre-test and pilot study were conducted in order to validate the self-developed instruments, which are adapted from previous studies. Respondents were selected using purposive sampling techniques. The choice for the purposive sampling was to enhance the execution of the research in an appropriate way. Since the researcher placed greater emphasis on the quality of the responses and reliability, purposive sampling was seen as an appropriate method. According to Etikan et al. (2016), purpose of the study and knowledge of respondents are crucial in the selection of purposive method.

In this paper, the questionnaires were distributed in each of the middle and high-income neighbourhoods in each of the fitness centres at cities. Klang Valley was selected for data collection because it is the strategic location and population diversity that makes it the cultural, technological and economic hub of Malaysia and most of the modern retail and fitness centre establishments are also located (Azmi et al., 2012). To avoid the mistake on the selection of target respondents, they were briefed regarding on the questionnaires contents and answering procedure. Once they are cleared with the instructions, they are allowed to answer the questionnaire. The whole exercise accomplished within 3 months (i.e., approximately 1 month each, at the two data collection cities).

To decide on the sample size of the respondents for this paper, it decided to use the rule of thumb that is considered to be the most appropriate sampling techniques is to have the ratio of the number of free parameters be 5:1 ratio (5 respondents: 1 items) by Tabachnick and Fidell (2014). They concluded that 5 respondents will answer 1 item on the questionnaire. It determines a sample size which leads to a choice of sufficient sample size that exceeds the recommended minimum suggested by most scholars (Hair et al., 2016; Trochim and Donnelly, 2008; Lomax and Schumacker, 2004). This is seen as more reliable for sample size strategy.

A total of 355 questionnaires were distributed among the mobile fitness application Gen y user. All of 355 questionnaires (100%) were answered and returned. This represented a sufficient number of sampling size for data analysis and interpretation. Eleventh demographic categories namely Gender, Age Group, Race, Marital Status, Highest Education Level, Occupation, Income Level, no of times per week doing exercise, Mobile Fitness App Frequency usage, Length of Times Engaging and Games Features Familiarity are presented in this present paper. Majority of the

respondents are male's user (68.2%), the majority of respondents are within the middle ages within the ages of 26 to 30 years (67.9%), single (92.6%) and the distribution of respondents' Highest Education Level shows that the majority of them are from Bachelor holders (80.5%).

The distribution of respondents' occupation shows that respondents from the private sector constitute the majority of this study (87.1%) and distribution of Income Level shows that respondents with income level RM2600 to RM3100 (67.0%). In terms of mobile fitness application activities, majority of respondents indicated majority of respondents mostly spent their fitness activity daily (59.6%), length of times engaging (69.9%) and all of the respondents were familiar with games features in mobile fitness application (100%).

Measurement and Analysis

The paper items measurement was self-developed through the adoption method from by Kyriazos and Stalikas (2018) because it presented as an integrative approach to the item development to the items process that combining steps from all sources by a different group of scholars. The measurement scale for goal core and goal mechanisms were adapted from Locke and Latham (2006) and Engagement (Cheung et al., 2011). All of the items were self-developed and re-conceptualise to suit with the paper research context and all of the adapted items were focused on organisational perspectives.

In data analysis stage, this paper analysed the data through structural equation model (SEM) and specifically the partial least square based structural equation modelling. Two stages of analysis were conducted: the measurement model and structural model. Smart PLS 3 was used for analysis, and the study used bootstrapping of 5,000 samples to test for significance level of path coefficients, direct and indirect effects as suggested by Hair et al. (2013). Because of the self-reported nature of the data, there was a chance of common method variance (CMV). The Harman single-factor test was employed, and it was found that the first factor accounted for only 35.2 per cent of the variance, and thus CMV was not a threat in this study.

Data Analysis

The measurement model was tested through the formative measurement model by using convergent validity, collinearity and significance and relevance of formative indicators. The criteria of convergent validity were set ≥ 0.60 and above, collinearity value through VIF was less than 5 and significance and the outer weight for each formative indicator must be significant. If not, it can still be retained on the basis of content validity (Hair et al, 2014). Table 1 shown the summarizes of measurement model analysis and all of the data are reliable for further analysis.

Table 1. The Measurement Model Analysis

Variables	Items	Convergent Validity	Weights	VIF	t-value weights	sig
Goal Core		0.807				
	GC1		0.165	1.291	1.303	0.193
	GC2		0.344	1.342	1.322	0.187
	GC3		0.416	1.526	1.425	0.155
	GC4		0.241	1.605	1.534	0.126
	GC5		0.531	1.533	1.359	0.175
	GC6		0.525	1.619	0.430	0.667
	GC7		0.036	1.590	1.960**	0.051
	GC8		0.792	1.592	2.046**	0.041
	GC9		0.584	1.582	0.402	0.688
	GC10		0.273	1.505	1.689	0.092
	GC11		0.150	1.609	1.134	0.258
	GC12		0.458	1.663	2.788**	0.006
	GC13		0.341	1.486	0.230	0.818
	GC14		0.288	1.528	2.772**	0.006
	GC15		0.306	1.414	3.958**	0.000
	GC16		0.264	1.429	1.076	0.283
	GC17		0.454	1.309	1.980**	0.048
Goal Mechanism		0.710				
	GM18		0.131	1.098	0.017	0.986
	GM19		0.497	1.349	1.370	0.171
	GM20		0.497	1.405	2.304**	0.022
	GM21		0.133	1.289	3.454**	0.001
	GM22		0.578	1.538	2.118**	0.035
	GM23		0.305	1.474	0.506	0.613
	GM24		0.259	1.486	1.684**	0.093
	GM25		0.345	1.567	0.754	0.451
	GM26		0.362	1.322	1.690**	0.092
	GM27		0.442	1.363	1.906**	0.057
	GM28		0.330	1.453	2.313**	0.021
	GM29		0.300	1.439	1.758	0.079
	GM30		0.258	1.520	0.484	0.628
	GM31		0.267	1.649	3.924**	0.000
	GM32		0.476	1.552	2.301**	0.022
	GM33		0.380	1.418	2.028**	0.043
	GM34		0.332	1.425	3.042**	0.002
	GM35		0.195	1.370	0.438	0.662
	GM36		0.272	1.393	0.427	0.669
	GM37		0.417	1.437	1.774	0.077
		0.809				

Engagement	ENG54	0.079	1.075	1.937**	0.053
	ENG55	0.406	1.384	5.370**	0.000
	ENG56	0.359	1.254	7.268**	0.000
	ENG57	0.295	1.258	4.511**	0.000
	ENG58	0.202	1.347	4.488**	0.000
	ENG59	0.292	1.527	5.369**	0.000
	ENG60	0.355	1.532	6.849**	0.000
	ENG61	0.220	1.459	6.013**	0.000
	ENG62	0.149	1.459	4.962**	0.000
	ENG63	0.188	1.609	6.392**	0.000
	ENG64	0.158	1.557	7.271**	0.000
	ENG65	0.265	1.648	8.450**	0.000
	ENG66	0.139	1.596	6.544**	0.000
	ENG67	0.200	1.371	6.466**	0.000
	ENG68	0.104	1.371	4.437**	0.000
	ENG69	0.149	1.424	6.459**	0.000
	ENG70	0.217	1.939	8.812**	0.000
	ENG71	0.121	1.901	7.057**	0.000

Note: t-value > 1.96

The structural model on this paper contains the relationship between independent and endogenous variables in the model. It shows how well the theoretical model predicts the hypothesized paths. The bootstrapping procedure (5,000 samples) was applied to generate the path coefficients, and their corresponding t-values which then enabled inferences to be made by determining the statistical significance of each path coefficient which shows all path coefficients and the explanatory power of the estimated model. The explanatory power of the estimated model is assessed by observing the R2 of the endogenous constructs. Hair et al. (2013) recommended that R2 can be 0.25 (weak), 0.50 (medium) and 0.75 (substantial). The model illustrated in the figure 2 below shows that 73.3 per cent of variance in individual performance is explained by the model (R2 = 0.733), thereby regarded as moderate, even though it is nearing the substantial level. In addition, all the three path coefficients were found to be significant, thereby providing support for all four hypotheses.

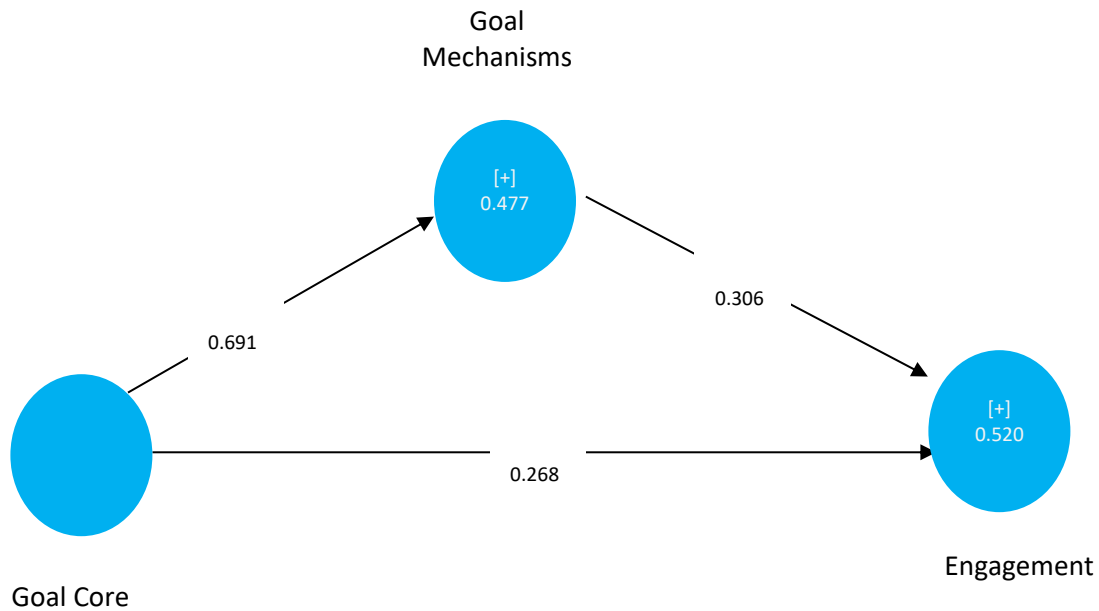


Figure 1: The Path Coefficient

Table 2: Hypothesis Results

Direct Relationships	β	S E	t-value	p-value	Confidence Intervals	
					5%	95%
GC -> ENG	0.446	0.070	6.345***	0.00**	0.282	0.551
GC -> GM	0.268	0.074	3.636***	0.00**	0.093	0.380
GM -> ENG	0.691	0.030	22.921***	0.00**	0.630	0.720

Note: t-value ≥ 1.96 *** p<0.05**

The PLS algorithms were used, and bootstrapping was tested for the significance of the resulted path coefficients and the mediation effect of individual market orientation. Table 2 presents the results and the decision rule for the proposed relationships. The results support all the suggested relationships; this subsection provides details of the results in Table 2. First, it was suggested that GC has a relationship with ENG variables. The model demonstrated a significant relationship between the two constructs, and this shows that the relationship is statistically significant and supported by data. Second, GC has a relationship with GM. The model demonstrated a significant

relationship between the two constructs, and this shows that the relationship is statistically significant and supported by data. Third, GM has a relationship with ENG. The model demonstrated a significant relationship between the two constructs, and this shows that the relationship is statistically significant.

Table 3: Mediation Results

Indirect relationships	β	SE	t-value	Confidence Intervals	
				2.5%	97.5%
GC -> GM-> ENG	0.369	0.028	6.458***	0.244	0.450

Note: t-value ≥ 1.96 ***, $p < 0.05$ *

Based on the analysis of the above Table 3, the study analyzed the mediation relationships were answered using a biased corrected bootstrapping approach, and the results show GM mediate that GC with ENG. The interpretation of mediation is down to the existence of zero between upper and lower confidence interval values (Ramayah *et al*, 2018). The implication is that when zero exists between the intervals, then constructs at one time may have no relationship, therefore eliminates the confidence of sustainable mediation.

Discussion

Based on the results discussion above, Goal Mechanisms (GM) has a significant effect on engagement and provided enough evidence to support the hypothesis that the individual with goal core in mobile fitness application will engage better. This statement is line with the findings provided by Shoaib and Kohli (2017) and Motel (2016) which agreed that goal core is found to be significant with a strong positive relationship on engagement. It also supported by past scholars such as Kyllö and Landers (1995) and Locke and Latham (2006) which posited that goal core sustained as positive predictor of performance and engagement behavior. Thus, this analysis has supported previous findings where a clear and precise goal core enhances the engagement behavior.

However, some of past studies have come up with contradict results such as Nahragang *et al*. (2013) where they discovered that goal core is not significantly related to engagement. Further, this research found that goal mechanisms (GM) mediates the relationship between GC and ENG. This finding is consistent with Lim and Noh (2017) who have reported full mediation effect of goal mechanisms on engagement which suggested that an individual with goal core highly engaged with their activity through the involvement of goal mechanisms (GM). Therefore, it provides evidence that support the hypothesis with goal core (GC) engage better if they possess goal

mechanisms. In addition, the results from mediation analysis revealed that goal mechanisms (GM) fully mediated the relationship between GC and engagement.

Conclusions

This goal of this paper was to apprehend the contribution of goal mechanisms to improve goal core and engagement relationship based on Goal Setting Theory perspectives in mobile fitness application context. In addition, the paper hypothesized the mediating effect of goal mechanisms (GM) on the relationship between goal core (GC) and engagement (ENG). The paper extended the knowledge regarding on the view of goal mechanisms as mediator as well as enhancing literature on Goal Setting Theory. The findings provided by this paper may enable the gymnasium owner and personal trainer to consider seriously on the importance of Goal Setting Theory through the role of goal mechanisms (GM) in enhancing the engagement of mobile fitness application user.

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