Investigating Self Determination Theory in Digital Media:

The Motivations with Mobile Applications for Continuous Learning

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Introduction

Theoretical paradigms provide an interpretative framework for research in a way that best supports the aim of the study. Cohen et al. (2007) emphasised the role of theory in research as being vital. He defined it as a framework for advancing our understanding of the subject. A theory may shape our thinking about the desirability of outcomes. Thus, it enables the researcher to understand the processes, and it helps with assessment of how the real world works .

According to Lee, Lee and Hwang, "theories of motivation could provide an important perspective from which to study information and communication technology (ICT) acceptance behaviour as they could help us answer questions such as 'What are the factors motivating the use of technology?' and 'How do different motivations interact with each other?'" (2015, p. 418). The motivation for using mobile technology in learning is a crucial part of this research purpose, as highlighted in the research questions. As the field of language learning mobile apps rapidly emerges, the need for theory-based research remains significant for my understanding of learners' experiences and their motivations. Lee, Lee and Hwang, in their study of the relationship between motivations, communication and technology acceptance, concluded that "investigating motivational factors and their influences is crucial since we can directly implement them in applications to increase usage" (2015, p. 418).

According to Song and Hill (2007), "online learning is closely associated with self-directed learning from both the process and the personal attribute perspective" (2007, p. 36). Previous research has adapted the principles of self determination theory (SDT) to examine online learning because of its efficacy in examining the environmental factors that hinder or undermine motivation, social functioning and personal well-being (Ryan & Deci, 2000a).

SDT as a framework analyses the individual's personality and motivation. It uses conventional empirical methods of research that highlight the importance of humans' inner personality and development and behavioural self-regulation. Its field

of investigation is most appropriate for studying language learning on mobiles as it pays attention to people's incentives, tendencies and natural psychological needs that are the basis for their self-motivation and integration into their personal everyday activities, as well as for the settings that may promote that positive motivational progress (Ryan & Deci, 2000c).

I claim that SDT is the most appropriate theoretical framework, as I believe it draws significant attention to the motivation behind the behaviour. Thus, in terms of technology and language learning mobile apps, SDT will allow deeper understanding of how learners engage with these language learning apps, rather than looking at what apps learners use. I also believe that SDT is a reliable motivational theory, since it critically considers whether behaviour is driven by intrinsic or extrinsic motivation (Deci & Ryan, 2012). Deci and Ryan define and differentiate between intrinsic and extrinsic motivation. They describe motivation as activities carried out 'for their own sake' that satisfy basic psychological needs, such as autonomy, competence and relatedness. Intrinsic motivation gives rise to the experience of volition, willingness and enjoyment (Volkmar et al., 2019). Extrinsic motivation, conversely, is an activity performed for an outcome separable from the activity itself, like rewards or punishments, which thwarts autonomy need satisfaction and gives rise to experiences of unwillingness, tension and coercion (Ryan & Deci, 2000a, p. 70).

Motivation in language learning, according to Widodo et al., is integrative or instrumental: the reason for learning a language relates to the degree of intention 'desire' and intensity 'behaviour' in learning a language. The reasons students learn a language usually places them into either integrative or instrumental motivation (2018, p. 106) .

Learners' motivation is dichotomised into personal fulfilment (intrinsic motivation) or external behaviour (extrinsic motivation) connected with the reasons for learning a language. SDT became a major theoretical framework adopted in

research, especially studies conducted to investigate a behaviour regarding intrinsic and extrinsic motivations (Widodo et al., 2018).

Besides the characteristics of independent learners previously noted in the definitions section in the literature review chapter – mainly 'self-directed' and 'autonomous' – we must acknowledge 'motivations' and 'self-evaluation' as key components for their engagement with learning. According to Candy (1991) in relation to language skills acquisition, learners are presumed to have an excessive level of self-direction in areas with a degree of familiarity, or in areas that are connected to a preceding experience. For example, Italian language learners might have a high level of self-direction if they were originally Spanish speakers.

Overview

Previous studies suggest that self-determination theory is a suitable framework for examining users' motivation in virtual environments (Ryan & Deci, 2000a). Proulx et al. (2017) suggest that users need to contribute to boosting intrinsic motivation and engagement in virtual environments. Sørebø et al. (2009) showed that the fulfilment of psychological needs accelerates motivated behaviour in education. In addition, Tamborini et al.'s (2011) study defining intrinsic motivation in media research discovers a positive connection between the psychological needs of autonomy and intrinsic motivations. Song and Hill (2007), in their study, used SDT as a conceptual model for understanding self-directed learning. They showed that for learners to be in charge of designing their goals and evaluating their learning processes, they must essentially rely on the utilisation of their resources. They must also rely on their ability to keep themselves motivated to engage in learning.

These initial claims of SDT as a theoretical framework imply that understanding the extent of the satisfaction of psychological needs is valuable for grasping learners' motivation and understanding their experiences in virtual-oriented environments (Huang et al., 2018).

Assessment of SDT

Based on selecting self-determination theory as the main theoretical framework for this research, there is a need for a deeper understanding of the theory and its relevance to media technology to achieve a thorough comprehension of its application.

Adapting SDT in media technology research may create confusion between social determination and technological determinism. Although these philosophies are not correspondent, they may overlap in thought due to the similarity of their terms. Determinism can be defined as the proposition that one's individual behaviour is determined by the social constructs and social interactions one engages in (Oztok & Brett, 2011). While trying to determine certain behaviour exhibited by different human beings, a social determinist is likely to be more focused on backgrounds, education and other interpersonal concepts. This implies that social determinism is more focused on the social phenomena surrounding the subjects of interest rather than physical or materialistic factors.

In recent years, the world has experienced a substantial shift towards the use of advanced technologies in performing several human activities. Technology has also influenced this rapid shift in using technology in operations. This has led to technological determinism, which acts as a complement to social determinism. According to Oliver (2011), technological determinism is the thought that change has been carried out by the development in the use of technology. Such developments cannot be avoided, and the society utilises these features of technology. There is a difference between technological determinism and social determinism. This is because technological determinism relies on the notion that we can only witness social change because of the new abilities that have been enabled by new technologies (Cherlet, 2014). On the other hand, social determinism believes that the use of technology is influenced by the society that uses it. Finally, self determination refers to the individual will to accept and engage with a behaviour. Therefore, this chapter

will assess the relevance of SDT and its motivational factors in the use of mobile media technology.

Determinism and its relevance to media development

The concept of social determinism was first considered by Emile Durkheim, a French philosopher, during the nineteenth and early twentieth centuries (Durkheim, 2014). Emile Durkheim is considered the father of the social sciences. Over the years, the use of technology has created an almost parallel theory called 'technological determinism'.

In different fields, the theory of social determinism has been viewed as either a complement or an opposition to other forms of social theories. For instance, though SDT is considered to be in opposition to both biological and objective factors, it has been seen as the equivalent of technological determinism in media studies. However, differences exist in the need for the development of the technology. Different media theorists have provided arguments on the relationship between social and technological determinism theories. For instance, Urry (2015) argues that the development in technology that human beings have experienced has been because of a certain need in the society.

Thus, technology is developed to fulfil this specific social need. Needs could either be social or economic in nature. Therefore, according to Urry, technologies are mostly developed with a specific objective in mind. The development of technologies consequently requires funds in order to accomplish them. With regard to social determinism, the technology that has been developed to meet a need in the society is likely to benefit only a few members of the society, mostly those who have the financial capacity to fund its development and improvement.

Innovation in technology has played a major part in the behavioural evolution of humanity. Nowadays, technology is witnessing uniquely rapid progress, the ability of machines to accommodate enhancement by integrating artificial intelligence, which

is being used to tackle the widespread automation. Technology can meet the intelligence of human beings (Huang & Rust, 2018). The development of technology through history has been illustrated by referring to the post-industrial revolution, as it has led to mechanical innovation in different fields in an aim to improve productivity. However, technological innovation regarding artificial intelligence has been used to strengthen the declaration of the information revolution in the spread of technology. There has been a general increase in automation together with the use of media technology. Using new technology in media has contributed to change in the social trends and behaviour transformations in recent years. Once historical progress in using technology is developed and examined, its significance performs as a new framework of separation from social change (Elder et al., 2015).

Motivation to use technology, SDT perspective

Several scholars in understanding human behavioural change and adaptation have argued that technology has had a significant impact on the lives. For instance, it is a popular hypothesis that media in the age of the Internet has transformed and will carry on transforming and revolutionising the global society. According to Crespo (2011), technology is determined by the society and technology evolves together with social structures. The implications of any technology for any society mainly depend on the steps taken to implement the technology within the society (Fulk, 2017).

Social and media scholars have reviewed SDT and technological determinism to address the changes that have been observed in societal behaviour. For instance, the social movement of the Western societies, from pre-war to post-war capitalism, changed the skill structure within the workforces in the 20th century. Also, post-industrialism led to the information era and, henceforth, automation. Technology has facilitated all these changes that have taken place in human history. Thus, SDT theory is believed to explain the role of a motivational factor in adjusting individuals towards adopting technology. Globalisation has brought about the development of many fields

that individuals can specialise in. With the organisation of work brought about by the use of technology, individuals are motivated to fund the use of technology in their social life and workplaces.

Technology determines many aspects in the modern society. However, this ability to determine the direction of the society is characteristic of specific societies. The capitalist and/or industrial society has made use of technology in various ways, yet it is still taking measures to implement the mechanisms that are required to socially guide technology (Perez, 2016).

On another level of discussion, contingency theory has highlighted the significance of technology in shaping an organisational structure (Zheng et al., 2010). Contingency theory has experienced several challenges in its incorporation with SDT and technology. We can also see the use of technology in the society in research relating to small organisational behaviour or social psychology. This has been proven by conducting research on the effects of a particular technology on the psychological functioning of workers, together with their interpersonal relations. We have found the integration of technology in the workplace to have both positive and negative effects on the psychology of workers (Bhatnagar, 2012). Sometimes, the efficiency of some workers is improved when a new technology can make them more productive. However, at other times, the integration of new technology can lead to less productivity because of laziness, as automation can perform most duties. Hence, technology may be incorporated into workplaces with the sole aim of enhancing work and enabling individuals to become more productive. I think technology is more effective in a longer time frame.

Newer versions of technological integration could allow this efficiency in smaller contexts, other social forces have associated together that affected the technology used (Sittig & Singh, 2015). However, these assumptions may be perceived as inclining toward the materialistic.

Challenges of SDT in technological adaptation

The most prominent argument relating to SDT and technology is on the origin of behaviour rather than the technological variable. According to Dafoe (2015), any form of technological determinism has a theory that can explain the dynamics of change in technology within the constraints of technology itself, or even in science but not in the social structures explained by technological determinism. Various scholars in technology and behavioural determinism argue that a feature in the social structure, such as a financial reward, motivates the speed of change in technology. However, in order to maintain the underlying role played by technology, in their arguments they don't intend to reject the social construction theory that explains the overall direction taken by the development of technology (Leonardi & Barley, 2010). I can achieve this by referring to the existing social structures.

A strong social construct can thus explain most features that are encompassed in a technology. It is, however, an enormous challenge for social constructionists to prove that the wide spectrum of social change due to technological development is solely the outcome of working together in a shared assumption of reality. Social constructionists assume that the weight of opportunities provided by technology is heavier than the outcome which is an assumption of relating change based on shared societal background. They, eventually, reflected the greatest challenge in the validation of SDT and technological determinism through the lenses of history. They based their assumption on relying on long periods of time with technological rejection. Social constructionists defined these time periods by when individuals are suspicious, hesitate or go through tough times in accepting the use of technology. In more recent years, research has deepened the understanding of human behaviour concerning technological and social adaptation, together with the related effects of new media in the society.

In modern times, there has been an evolution to the notion of a technological path. I believe technological innovations expand along different paths or trajectories.

There is, however, an examination regarding these technological trajectories in societies, as to whether they represent the collective approach of a determined social behaviour or they a set of opportunities that can by utilised by the members of the society. This argument resonates with the classical idea of what drives change in the society by Alvin Toffler, as discussed in the literature review chapter.

Geertsema-Sligh (2019), have criticised development communication for its assumptions of powerful media effects, its technological deterministic viewpoint and its Western-centric assumptions regarding development. In recent years, approaches to development communication have changed from the so-called 'dominant discourse' to include the voices of participants or receivers of development communication through participatory exchanges. For example, Scott (2014) cites a 2006 definition of communication for development (C4D) as "a social process based on dialogue using a broad range of tools and methods. It is also about seeking change at different levels, including listening, building trust, sharing knowledge and skills, building policies, debating and learning for sustained and meaningful change" (p. 2).

An additional argument inspects the societal factors that outline the technology impact on the society. The impact of any introduced technology relies primarily on its social context. I believe the context has either a positive or negative impact on the adoption of that introduced technology. If the society adopts the introduced technology, then the social context is apparently significant and will influence how the technology will be utilised and consequently its impact on the society. A positive adoption of technology is likely to enhance the overall competence of a society. However, the more advanced forms of technological innovations are not that simply introduced into a social context to be embraced and maintained (Mylan & Southerton, 2018).

The notion that technological incorporation into operations, conversely, has no causal impact is also difficult to maintain. Some determinism scholars hence argue

that technology in any organisation is likely to make the existing organisational and social structures almost hard to avoid. Some writers have utilised ideological technology in the social field. It is, however, not very clear that incorporation of technology is expected to motivate. this notion has driven some scholars to be against any form of technological determinism.

SDT, engagement and game-like media learning

According to self-determination theory, satisfaction of three basic needs determines the nature and quality of motivation: autonomy, competence and relatedness (Ryan & Deci, 2000b). Satisfaction of these needs encourages internalised motivation, such as intrinsic motivation 'interest', which leads to better engagement and learning (Ryan & Deci, 2000a). Self-efficacy (Bandura, 1993), which is concerned with one's perceived ability to achieve desired outcomes, is another related key factor that drives motivation and engagement. "Theories should be seen not as a body of predetermined facts, but as controversial, and subject to change over time. Theory should be treated as a set of tools that can be used and 'abused', not as a body of received wisdom that should be ingested and then regurgitated" (dbuckingham2015, 2016, para. 13).

The following paragraphs expand on these key components of motivation in mobile media and game-based learning environments.

Autonomy

Autonomy, competence and relatedness are important factors in sustaining and maintaining motivation (Ryan & Deci, 2000b). Autonomy is defined as the ability to control one's own behaviour and experience, as well as the development and direction of action (Ryan & Powelson, 1991). Game-based learning settings should be presented with the paradox of control in an uncertain situation in order for educational games to be motivating (Csikszentmihalyi, 1990). As a result, learners

feel in command of their surroundings. Game-based learning environments should allow learners to make their own decisions. Any constraints in a game-based learning environment may limit the perceived correct choices, which may later develop a negative impact on learners' perceived autonomy.

One conflicting feature of SDT is the assertion that specific psychological needs are essential in all societies. This claim has sparked a particular debate in the context of autonomy. Markus et al. (1996), for example, concluded that in traditionalist cultures or collectivist societies, autonomy is relatively irrelevant. While they accepted that societies have different beliefs and customs, and how each society may vary in its view on the importance of autonomy subjectively. SDT, however, claim that the relevance of autonomy is impartial. This emphasis on essential needs is about understanding the most critical drivers of human motivation, commitment and learning (Ryan & Deci, 2020).

Competence

In SDT, motivation requires the construction of a sense of accomplishment and effectivity, besides satisfying the need for autonomy (Ryan & Powelson, 1991). Players in a game environment must believe that they are getting closer to achieving the game's intended outcome or goal. The challenges they face should be a suitable match for their abilities. Based on that, they can experience attainable challenges, with some maintaining a level of uncertainty regarding the outcome (Csikszentmihalyi, 1990). According to Csikszentmihalyi (1990) and Fullerton et al. (2004), a variety of factors, such as the chief difficulty of tasks and game usability, can support or delay learners' perceptions of competence. The factors can come in the shape of game structure, user interface and navigation features. Hence, the game's feedback mechanisms are critical for developing a sense of competence so that the game structure can provide information to the learner/player about how far they've progressed toward their goal.

Confidence and self-efficacy

Self-efficacy (Bandura, 1993) is a belief in one's personal capacity to attain a desired outcome, and it has been reported to be a good predictor of future learning outcomes (Pajares, 1996). Performance feedback and social comparison are two factors that may influence self-efficacy (Bandura, 1993). Self-efficacy can be boosted when people achieve their objectives. Learners/players also assess their own ability to fulfil a task by observing how others achieve their objectives. Learners can gain self-efficacy in a game-based environment by overcoming various challenges in the game. However, as they observe other players struggle in the game, they may get affected and lose confidence and therefore impact negatively their perceived self-efficacy. When users have a high level of self-efficacy, they are more likely to invest time and effort in their problem-solving tasks (Zimmerman & Campillo, 2003). Henceforth, when users' self-efficacy for the game's challenges is higher, they are often more likely to engage in the game setting.

Relatedness

Finally, the third component of motivation, SDT, emphasises the value of developing healthy interpersonal relationships (Ryan & Deci, 2000c). Conventionally, relatedness, in a learning context, has been defined as a shared sense of belonging among learners in the classroom setting, such as through acceptance, inclusion and support. It can also refer to the quality of a learner-instructor relationship (Reeve, 2006). I can extend relatedness to the quality of relationships among users in a game-based learning environment (Ryan et al., 2006). Peer relationships can emerge and might also be intensified as users establish a common language of command and collaborate jointly toward common goals. As a result, a game-based learning environment may cultivate the relatedness component of motivation, by allowing users to work together to solve a perceived complex situation within the setting.

Effort and persistence

Learners' behaviour in a learning environment is affected by effort and persistence. Motivational theories interpreted them as the essential indications of engagement (Ryan & Deci, 2000b). The combined motivational factors, as discussed previously, namely interest, autonomy, competence, relatedness and self-efficacy, have a direct impact on effort and persistence. Learners' reflection on their perception of the setting they are engaging with is influenced by these motivational factors (Pintrich, 2000). In a game-based learning setting, commitment and persistence could be measured by the time factor, such as how much time users spend on a task/challenge, and how many challenges they successfully execute in a time frame.

Components of motivation

Ryan and Deci (2000b, P. 54) defined motivation as "being moved to do something". They recognised the difficulties in analysing motivation, emphasising the importance of understanding not only different levels of motivation but also different forms of motivation (Ryan & Deci, 2000c). These classifications are determined by the level and the orientation of motivation (Ryan & Deci, 2000b). Recognising these factors influenced the choice of a motivation framework that is simple and easy to measure. The aim of referring to this framework is to focus on the motivational orientation, or the expectations that motivate action (Ryan & Deci, 2000b). Intrinsic and extrinsic motivation are the two orientations of motivation to be considered.

Intrinsic motivation

When an action is intrinsically inspired, we do it without expecting much in return (Deci et al., 1996). The participant enjoys the activity because of their participation; therefore, they are doing so for their very own sake rather than for the sake of receiving a reward (Deci et al., 1996). Enjoyment and fun are the examples of doing a task for own sake (Deci et al., 1996). However, extrinsic motivation is centred

on achieving a distinct result (Ryan & Deci, 2000b; Deci et al., 1996). I should contrast extrinsic motivation with intrinsic motivation, since achieving a distinct goal is not perceived as ultimately intrinsic.

Extrinsic motivation

Extrinsic motivation values a behaviour's utility, while intrinsic motivation is solely concerned with the activity itself (Ryan & Deci, 2000b). Extrinsic motivation leads to goals that are not integral to the activity. Namely, reinforcement, positive feedback and admiration (Koestner et al., 1987), and economic incentives, such as financial benefits (Kanfer et al., 2012). According to SDT, external factors can affect behavioural outcomes over a short period. The fundamental distinction between intrinsic and extrinsic motivation is the notion of perceived value. The former refers to doing something because its value is perceived as inherently interesting, fun or satisfying, like reading a fiction book, while the latter applies to conducting a behaviour for its valuable outcome, like reading a research paper. An individual can act in a certain way in the short term due to external factors, but we cannot sustain such behaviour over an extended period (Deci & Ryan, 1985).

Although extrinsic motivations have been previously contrasted against intrinsic motivation in a dichotomist depiction, that is not always the case. Motivations are rather characteristically fluid, as they might intersect and overlap. A comparison between intrinsic and extrinsic motives, from SDT's perspective, cannot always be crystal clear, since instrumental motives can differ in context and character (Ryan & Deci, 2020). However, according to Ryan and Deci (2020), SDT has long identified four main extrinsic motivation subtypes.

External regulation

External regulation is a form of motivation that is typically perceived as highly regulated and completely non-autonomous. It is a motivation instigated by an externally applied reward and punishment approach.

Introjected regulation

Introjected regulation is extrinsic non-autonomous motivation that has been partly internalised. Internal incentives related to self-esteem might regulate this motivation for performance enhancement. Introjected regulation as motivation may enhance performance and prevent fear, embarrassment, disappointment or blame for deficiency in performance. Introjected regulation in academic practice often takes the form of ego-involvement (Ryan, 1982), in which self-esteem is tied to the outcomes, leading to an internally controlled regulation.

In both previous types, external regulation and introjected regulation, they compromised autonomy. I can perceive motivation as external factors. However, the following autonomous types may show that extrinsic motivations can also be internally triggered.

Identified regulation

In identified regulation, the individual knowingly recognises and approves the importance of an action, resulting in a high level of internal accordance or willingness to act.

Integrated regulation

This type I perceive as the most autonomous type of the four extrinsic motivations. With an integrated regulation motivation an individual not only recognises and approves the activity's meaning but also considers it to be coherent with other essential internal interests.

Autonomous extrinsic motivations, identified regulation and integral regulation, overlap the principal trait of intrinsic motivations by being volitional, where the behaviour is based on a personal act. However, they differ mostly in that intrinsic motivation is based on interest and enjoyment. In intrinsic motivation, an engagement in a behaviour is triggered by the perception of finding it enjoyable to do, while identified and integrated extrinsic motivations are based on a sense of value of the behaviour, even though they might not be perceived as enjoyable or fun (Ryan & Deci, 2020).

Ryan and Deci (2020) also emphasised "amotivation" (P. 61), describing it as a lack of motivation, and hence demotivation or a loss of motivation, which I assume might be too common in a learning environment. Demotivation may stem from a lack of perceived competence to engage or a lack of relatedness. Lack of motivation, I may consider then, to be a negative indicator of engagement in learning.

With so many understandings of intrinsic and extrinsic motives, alternative studies suggested the concept of multiple motives and a relative autonomy continuum (Sheldon et al., 2017). I might group these various modes of motivation or regulatory types along a spectrum, to reflect on their relative autonomy, including their differences in character and context. Many studies have confirmed the perceived continuum relationship structure between the various categories that are consistent with the SDT relative autonomy (Howard et al., 2017).

SDT acknowledges that several simultaneous factors motivate most determinant behaviours (Litalien et al., 2017). A behaviour might be both intrinsically driven and identified with such behaviours, and/or both externally regulated and introjected. A value system representing total relative autonomy, or a value system for autonomous and regulated motives, is often used besides looking at the particular impact of each motive (Ryan & Deci, 2017).
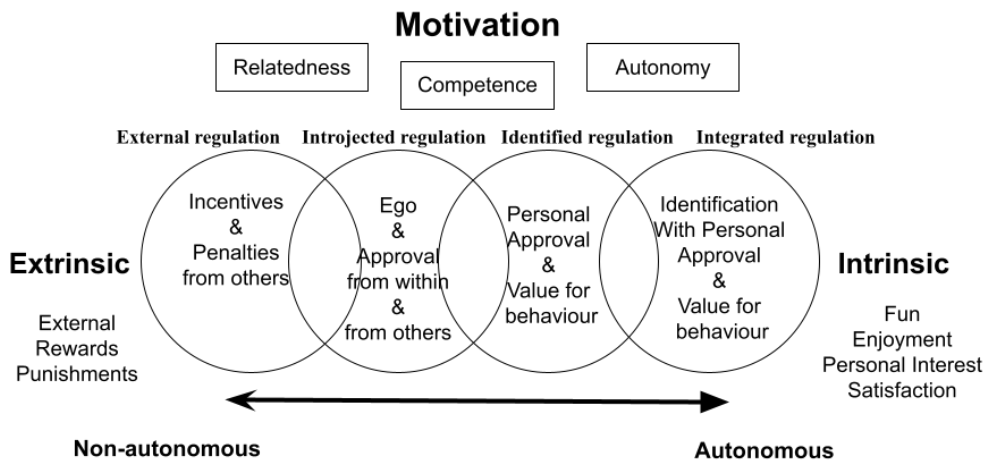
FIGURE 3: MULTIPLE MOTIVATION CONTINUUM

In the light of SDT and motivation, an investigation of mobile media and language learning for independent users is needed. This study presumes that conducting a more intensive investigation would provide a better understanding and assess the relationship between the complex engagement and the new media, particularly language learning applications. Media developers and digital linguists would benefit from this investigation and therefore might consider the design of the mobile applications to empower the engagement of independent learners.
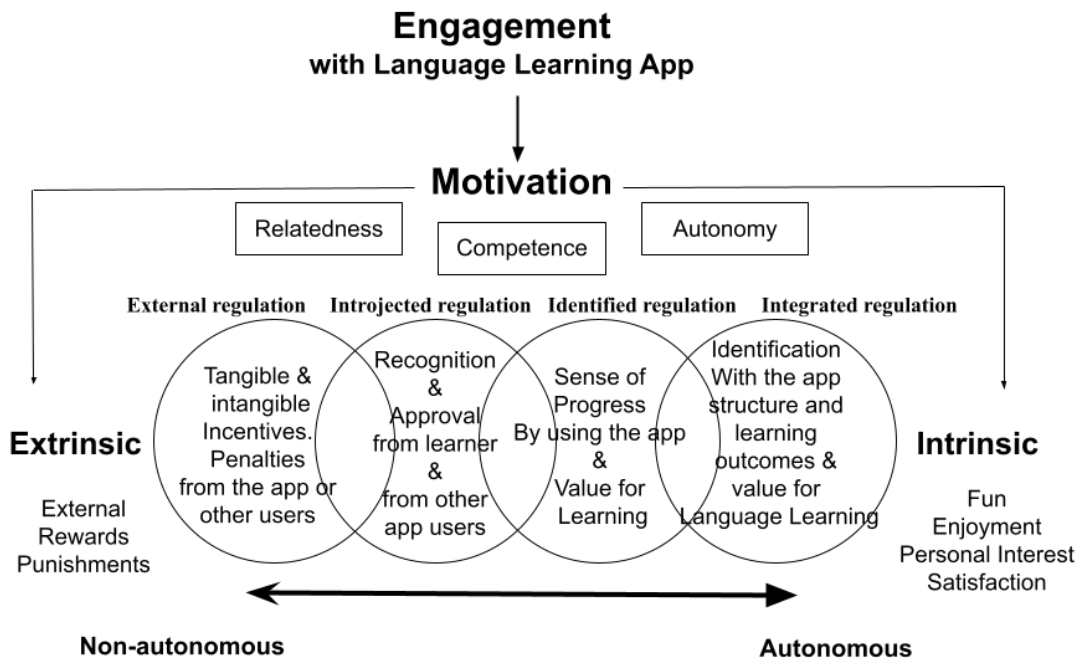
FIGURE 4: SDT MULTIPLE-MOTIVE APPLIED

For Ryan and Deci (2020), in their discussion on the current and future practices of SDT, the current focus of SDT research is on the potential and challenges of emerging media technology for learning. Capturing learners' interest and creating engagement with learning assignments is one of the most complex issues in modern educational settings. As a result, academics are using the attention-grabbing capacities of games in the classroom, using gamification tactics to boost motivation. Prospective SDT studies will undoubtedly focus on how educational media, e-learning, remote classrooms and other technological opportunities can inspire engagement and learning, as Ryan and Rigby reflected in the Motivation as a core element in game-based learning chapter in the Handbook of Game-Based Learning (Plass et al., 2020).

Finally, Ryan and Deci (2020) and Patall and Zambrano (2019) concluded that despite the global acknowledgement of the psychological needs and basic components of motivation for learning, its adoption is still minimal. There is still

much work to consider regarding how much we understand the factors that enhance motivation, henceforth, engagement and meaningful learning. Initiatives that actually seek to improve the satisfaction of the fundamental psychological needs of the learning setting have not yet been universally implemented.

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