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Intent to transfer learning amongst adult learners with differential learning orientations

Christy Chung^A

A

Director, Continuing Education and Training Academy, Ngee Ann Polytechnic, Singapore

Elaine Chapman^B

B

Associate Professor, Graduate School of Education, University of Western Australia

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Abstract

In Singapore, the government has invested significant resources into its SkillsFuture training programmes, which were established with the goal of ensuring that the skills of workforce members remain current and continue to meet the demands of the global economy. To ensure that these initiatives yield the best outcomes, however, learners must actually transfer what they have learned to their workplaces post-completion. The present study drew upon data collected as part of a larger research programme that focused on the topic of adult learners' motivations and intent to transfer in further learning programmes. In the present study, cluster analysis was used to identify whether adult learners in one polytechnic (n=444) fell into distinct 'learning orientation' profiles based on their learning motivation goals and levels of intrinsic and extrinsic motivation to learn. This analysis suggested three distinct learning orientation profile clusters (Idealists, Self-Actualists and Pragmatists), who differed significantly in terms of their learning motivation and intent to transfer. Other differences observed between these clusters (i.e., whether they received rewards for programme completion; whether they were given a choice about enrolling into the training programmes; in the level of support they received to attend the programmes; and the perceived relevance of the programmes to their own situations) also underscored potential ways in which the SkillsFuture initiative and associated further learning programmes could be enhanced to maximise their ultimate benefits for workplaces. Implications for policies and strategies to achieve this goal are discussed.

Correspondence

christylimchung@yahoo.com.sg^A

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Introduction

To support Singaporeans affected by the economic impact of COVID-19, the SGUnited Jobs and Skills Package, under the ambit of the SkillsFuture movement, has been launched to support close to 100,000 jobseekers through expanded job, traineeship, and skills training opportunities. By 2020, around 540,000 individuals and 14,000 enterprises had taken part in SkillsFuture training programmes in Singapore (Ang, 2021). The SkillsFuture movement is premised on the notion that workplaces will benefit ultimately from the upskilling and reskilling of employees via the transfer of knowledge, skills and attitudes acquired from associated training programmes. While this remains an important presumption upon which the movement is based, this is unlikely to occur without dedicated efforts to ensure that adult learners who undertake further learning programmes do so with the intent to transfer what they learn post-completion.

Adult training programmes are generally seen to be useful only to the extent that the knowledge, skills and attitudes learned are actually transferred to the workplace (Chiaburu & Lindsay, 2008). Transfer in this context refers to the application of knowledge, skills, and attitudes learned to a learner's job (Burke & Hutchins, 2007; Corte, 2003; Wexley & Latham, 1981). The investments made by the Singapore Government, as well as by individual employers, to fund and support the SkillsFuture training programmes are significant (Yang, 2017). Thus, ensuring that what is learned in these programmes is eventually transferred to the workplace is critical to ensure that returns on these investments are realised.

At present, the SkillsFuture movement is voluntary for adult learners. In light of this, it is critical to understand adult learners' motivations and intentions to transfer what they learn in order to ensure the SkillsFuture initiative ultimately benefits workplaces. This is so given that learners' motivations and intentions are likely to be an important predictor of the actual degree of transfer that eventually occurs within their workplaces (Brand-Gruwel et al., 2014; Chiaburu et al., 2010; Foxon, 1997; Nijman & Gelissen, 2010; Noe, 1986; Noe & Schmitt, 1986; Reinhold et al., 2018; Seyler et al., 1998).

Literature review

Adult learners' overall motivation and intent to transfer of learning

While various motivational frameworks have been put forward in the literature, the Expectancy Value Theory (EVT) of Eccles and colleagues (2000) focuses on the interaction between the individual and specific learning tasks. In EVT, motivation to engage in any task will be a product of how the individual perceives the task and his or her ability to tackle it. More specifically, in EVT, an individual's motivation is posed to be a product of:

- Their expectancies for success in the task – this is conceptually similar to the notion of self-efficacy, which reflects the confidence that the individual has in his or her abilities to do what is required by a learning task.
- The attainment value they assign to the task – this refers to the extent to which the task or activity is important with respect to the identity of the learner;
- The utility value they assign to the task – this refers to the extent to which learners see the activity as one that will help them to reach important personal goals;
- The intrinsic value they assign to the task – that is, whether the learner inherently enjoys engaging in the task, and is interested in the content; and
- The costs associated with engaging in the task – this can include both opportunity costs (e.g., loss of valued alternative activities) and psychological costs (e.g., increased anxiety and stress related to the task).

In the present study, an instrument developed by the authors to measure motivation to transfer based on the EVT model was used. This model was deemed appropriate for measuring motivation to transfer because it emphasizes learners' perceptions of the task as a source of motivation, rather than only focusing only upon internal characteristics of the individual. Instruments based on the EVT model, therefore, make it possible to glean not only how learners see themselves but also provide specific information about how certain activities (in this case, transferring learning to their workplaces) are perceived.

While some research has already been directed toward the topic of transfer motivation, relatively little attention has been paid to the construct of intent to transfer (Pugh & Bergin, 2006), as differentiated from motivation. Adults' intentions with respect to their learning will have an important influence on how they go about that learning, as well as the actions they subsequently take (Maurer & Palmer, 1999). Behaviours are regulated by intentions, and considerable evidence indicates that intentions are highly correlated with behaviours (Ajzen, 2011; Locke, 1968). If learners approach learning with the intent to transfer, therefore, they are more likely to be successful in actual transfer situations (Seiberling and Kauffeld, 2017; Sternberg & Frensch, 1993).

While we need to acknowledge that motivation and intent to transfer are related constructs, there are likely to be important differences between them that may be particularly relevant in the case of adult learners. For example, a worker within a given company might be highly motivated to embark on a specific new initiative but may not have a strong level of intent to do this because they may believe that doing so will cause friction with colleagues. Equally, this worker may not be personally motivated to embark on an initiative but may have a strong intent to do so because they believe that this is an expectation of their workplace supervisors. Despite

the demonstrated relevance of intent to transfer in terms of eventual behaviours, this construct has received much less attention than the construct of motivation (Pugh & Bergin, 2006) within the previous literature.

Previous research suggests that adult learners' intent and motivation to transfer their learning may be influenced both by factors internal to individuals (e.g., their own motivation to engage in the learning in the first instance) and also factors external to them (e.g., situational factors, such as the level of support they receive to engage in the learning). The next sections provide a background on both types of factors, focusing on their possible relationships with motivation and intent to transfer.

Learning orientations as predictors of motivation and intent to transfer

The sixth core principle of andragogy expressed by Knowles et al. (2015) relates to motivation. To be motivated means to be 'moved' to do something, such as to engage in a learning task (Ryan & Deci, 2000). Given the significance of motivation in education generally, various theoretical frameworks on motivation have appeared in the educational psychology literature. Two that have been applied consistently in the study of adult learners' motivation are self-determination theory (and in particular, the notions of intrinsic vs extrinsic motivation within this framework – Deci, 1980) and achievement goal orientation theory (Dweck, 1986; Dweck & Leggett, 1988), both of which have attracted significant attention over the past two decades. Both overarching frameworks have also been applied to study transfer of learning outcomes in prior research.

Intrinsic versus extrinsic motivation – self-determination theory

In self-determination theory, intrinsic motivation refers to doing something because it is inherently interesting or enjoyable, while extrinsic motivation refers to doing something because it leads to a desired outcome (Ryan & Deci, 2000). Intrinsic motivation to learn is fostered by a commitment to the learning itself. In other words, in this form of motivation, "there is no apparent reward except the activity itself" (Deci, 1975, p. 23). Intrinsically motivated employees engage in learning out of an inherent interest in the content itself (Minbaeva, 2008). Various prior studies have suggested that intrinsic motivation has a positive effect on transfer (Cabrera et al., 2006; Frey & Osterloh, 2000).

Extrinsic motivation to learn occurs when employees engage in given activities with the expectation of receiving financial rewards and incentives for this engagement. The main characteristic of employees who are externally motivated towards learning is that some external contingency, which is valued and expected to be obtainable, drives their involvement in that learning (Minbaeva, 2008). Although it has been widely assumed that adult learners who are extrinsically rewarded upon completion of their training programmes are more likely to transfer what they have learned to their workplaces, findings from prior studies

suggest that this may not occur in all situations (Frey, 1997; Frey & Jegen, 2001). In general, it is believed that in adults, intrinsic motivation will be a more important driver for subsequent behaviour. However, Frey and Osterloh (2000) posited that both intrinsic and extrinsic motivation are crucial for transfer to occur.

Mastery versus performance goals – achievement goal theory

While the notions of extrinsic and intrinsic sources of motivation form the focus of the self-determination perspective, achievement goal orientation theory focuses on the specific goals that learners adopt in approaching their learning tasks. Learners can engage with learning tasks with various goals in mind, including the goals of mastering the content (mastery goal); of doing better than others in the tasks (performance-approach goal); or of avoiding failure in the tasks (performance-avoidance goal). Mastery goals tend to be associated with high levels of interest in a task and the use of deep learning approaches, whereas performance-approach goals are generally associated with a drive to achieve better outcomes for their own sake. A mastery orientation emphasises learning and/or task competence, seeking challenges, and persisting in the face of failure (Dweck & Leggett, 1988), while a performance orientation emphasises appearing competent through gaining positive (performance approach orientation) and avoiding negative judgments (performance avoid orientation) of competence (Chiaburu & Marinova, 2005; Middleton & Midgley, 1997; Pintrich & Schunk, 2002). The two orientations are not, however, mutually exclusive in that adult learners can possess both concurrently to a greater or lesser extent (Pugh & Bergin, 2006).

The goal orientations that adult learners adopt can also have a profound impact not only on their learning processes but also on their ultimate learning outcomes, including whether they transfer their learning. For example, in a meta-analysis, Mesmer-Magnus and Viswesvaran (2007) noted that mastery orientations are better predictors of eventual transfer than performance orientations. Similar findings were reported by Bereby-Meyer and Kaplan (2005) as well as Chiaburu and Marinova (2005). Results of this kind indicate that learners who adopt a mastery orientation and are focused on learning and understanding are more likely to transfer what they learn subsequently (Kozlowski et al., 2001; Pugh & Bergin, 2006). It has been posed that mastery-oriented adult learners tend to see transfer as yet another learning opportunity, while performance-oriented adult learners look for performance-related cues to justify their attempts to learn and transfer (Ford & Weissbein, 1997). Previous research also suggests that performance-avoidance goals are typically associated with less favourable learning outcomes than either mastery or performance-approach goals (Cellar et al., 2011; Diseth, 2011; Elliot & McGregor, 2001; Huang, 2012; Remedios & Richardson, 2013).

The notion of learning orientation profiles in motivation

While the two frameworks discussed above (i.e., self-determination theory and achievement goal theory) may appear to be competing models, these two models may be deemed to provide complementary perspectives on the overall learning orientations that learners can exhibit. In other words, it is likely that the eventual behaviour of learners will depend upon a combination of multiple motivational variables that are operating simultaneously at any given point in time. Much previous research on links between motivation and subsequent behaviours has focused on exploring these from a single-variable perspective (e.g., looking at the effects of intrinsic vs extrinsic motivation as predictors of one or more outcome variables). This approach potentially ignores important relationships that may emerge between the outcome variables and the predictor variables *collectively* or as a set.

To take an example, it is possible that some level of both intrinsic and extrinsic motivation will be needed for a given outcome to be achieved successfully. In order to embark on learning effectively within a given programme, an adult learner may need to have a certain level of intrinsic motivation or interest in learning the material confronted within that programme. This will be a critical factor in determining the extent to which he or she will transfer what is learned post-completion to the workplace. By the same token, however, if the learner has only this form of motivation, and is unaffected by factors such as external recognition and reward, that learner may also not be driven to ensure that their transfer plans align well with the goals of his or her workplace. Therefore, while extrinsic motivation may not be sufficient in itself to drive effective transfer, it may make a useful contribution to successful outcomes when it operates synergistically or in combination with a strong level of intrinsic motivation.

Furthermore, while it is important to look at learners' overall motivations for engaging in a particular programme (i.e., their intrinsic and extrinsic motivation levels), this may not be sufficient to fully understand what drives them to take particular approaches to learning within those programmes. These kinds of process outcomes are likely to depend more upon the specific goals that the learner adopts while embarking on the learning tasks they need to complete – that is, whether they adopt mastery or performance goal orientations in approaching those tasks. As Kraiger et al. (1993) suggested, these are critical variables in determining what happens *during* learning. Thus, while factors such as overall intrinsic or extrinsic motivation may drive behaviours such as enrolling in the programme in the first instance, the specific goals that the learner adopts may be more important for determining how learners approach their specific learning tasks whilst enrolled.

Based on the above arguments, further research is needed in this area, which focuses on the collective impact of different motivational predictors on desirable outcome variables. Such a focus would enable educators and policymakers to understand how learners with different overall profiles (that is, combinations of given factors) are likely to respond to specific programme characteristics. In the present

study, therefore, we aimed to explore whether clusters of adults with particular 'learning orientation profiles' or combinations of intrinsic motivation, extrinsic motivation, and performance or mastery goal orientations had different levels of motivation and intent to transfer their learning to the workplace.

Training design and situational factors on transfer of learning

Given that there is likely to be a combination of motivation variables that are operating simultaneously upon behaviour at any specific point in time, it is imperative that adult educators and policymakers appreciate, understand and work with the complex orientations of adult learners to achieve optimal programme outcomes. In addition to recognising the importance of such combinations of factors for predicting subsequent behaviours and outcomes, therefore, it is important that stakeholders also understand how factors such as training design and situational factors may contribute to creating or altering these profiles in adult learners. Armed with this knowledge, it may then be possible for these stakeholders to identify ways in which to foster optimal learning orientation profiles in adult learners to achieve the best possible long-term outcomes. Several situational factors of this kind were explored within the present study.

Training design factors

The effects that training design has on transfer were first explored comprehensively by Holton in 1996 (Seyler et al., 1998), followed subsequently by researchers such as Gegenfurtner et al. (2009), who found that learners' transfer motivation could be shaped by training design factors such as whether learners have access to supportive social networks whilst embarking on their learning (Gegenfurtner & Vauras, 2012). While there have been studies conducted to ascertain the impact that training design / andragogical approaches have on learning motivation and transfer (Colquitt et al., 2000; Gegenfurtner et al., 2009; Wlodkowski & Ginsberg, 2017), similar studies have yet to be conducted with respect to adult learners in Singapore.

The present study, therefore, explored both how training design factors, such as format of instruction (i.e., face-to-face, online or blended learning) and social training contexts (i.e., individual or collaborative learning), related both to motivation and intent and also, to the learning orientation profiles of the learners. While the relationship between these training design factors and motivation and intent to transfer needs to be considered because this indicates how important the factors are in terms of predicting the end-point outcomes, knowing their relationship to the learning orientation profiles of learners is also important for determining whether these factors are exerting their effects by first having an impact on these learner profiles. Having information at this level would then provide educators and policymakers with a stronger basis upon which to devise strategies to optimise the learning outcomes achieved in adult education programmes.

Format of instruction (i.e. face-to-face, online or blended learning) has also been found to impact both learning motivation and transfer in previous studies (Demirer & Sahin, 2013; Golden & Karpur, 2012). Specifically, Demirer & Sahin (2013) found that students in a blended learning group were more successful in transferring their knowledge post-completion than those in a face-to-face group, concluding that the blended learning approach had a positive effect on learning transfer. Positive age-related differences on motivation have also been observed in social training contexts in comparison to those based primarily on individual learning methods (Carstensen, 2006; Gegenfurtner & Vauras, 2012), which prompted Volet et al. (2009) to call for training programmes to incorporate social interaction into all learning activities for older employees. The present study thus also investigated whether the format of instruction used related significantly to learners' motivation and intent to transfer, as well as their learning orientation profiles.

Choice and reward

Intrinsic motivation theory suggests that the availability of choices is crucial to increase feelings of mastery and self-determination (Deci, 1980). Self-determination theory states that individuals have a basic drive toward growth as humans and that needs for autonomy, relatedness, and competence are at the core of this drive. Consistent with these propositions, it has been found that adult learners tend to be more motivated to learn in situations where they are able to choose the topic (Houde, 2006). Consistent with theories of interest (Hidi, 2006; Krapp, 2002), expectancy (Kanfer & Ackerman, 2004; Wigfield & Eccles, 2000) and self-determination (Deci & Ryan, 2000; Krapp, 2002), the availability of choices is likely to increase feelings of autonomy, mastery, and situational interest, which in turn may increase overall learning motivation.

Huczynski and Lewis (1980) similarly posited that the likelihood of transfer can depend on whether learners attend programmes voluntarily. In a later study, Baldwin et al. (1991) examined whether the availability of choice produced incremental motivation over and above that produced by the desired outcome(s) / valence arising from adult training programmes. It was found that trainees who had choices in terms of the training they received displayed higher levels of learning motivation than others, provided that their choices were acceded to. This was attributed to the "fair process effect", in which people are found to be more receptive to decisions and their consequences if they have participated in making them (Folger et al., 1979).

Training relevance and support

In education, the term relevance typically refers to learning experiences that are either directly applicable to the learner's professional aspirations and interests or that are connected in some way to real-world work issues, problems and contexts. Prior empirical research has established strong and significant relationships between perceived learning relevance and learners' intentions with respect to transfer of learning (Axtell et al., 1997; Gregory & Rodriguez,

2005). Learning relevance has also been shown to positively influence actual transfer behaviours in numerous studies (Bates et al., 2007; Holton III et al., 2000; Nafukho et al., 2017; Renta-Davids et al., 2014).

Social support is another situational factor that has been studied previously in relation to the transfer of learning from adult education programmes (Aguinis & Kraiger, 2009; Jacot et al., 2015; Noe, 1986; Segers & Gegenfurtner, 2013). Social support refers to the degree to which learners perceive support for their work tasks (Burke & Hutchins, 2007) and their beliefs about the extent to which significant others at work care about them and value their contributions to the organisation (Blume et al., 2010). Social support has been found in a few previous studies to be a positive predictor of transfer outcomes (e.g., Baldwin et al., 1988; Colquitt et al., 2000; Fecteau et al., 1995; Maurer & Tarulli, 1996; Reinhold et al., 2018). Findings on these links have, however, produced somewhat mixed results, and in particular, on the extent to which different sources of support can be linked to outcomes such as adult learners' intent to transfer their learning to the workplace.

The present study

Previous research into the predictors of motivation in adult learners has tended to focus on the use of a variable-oriented approach. In other words, the methods used in these studies have focused on examining the predictive power of single variables at a time on outcome variables such as learning motivation and goal orientations. As suggested previously, however, it is possible for different predictor variables, such as extrinsic and intrinsic motivation, as well as learning goals, to operate in tandem to drive particular outcomes. As a result, there is a need for research that acknowledges these predictors as a collective (referred to in this paper as learning orientation profiles) rather than as stand-alone predictor variables. The three research questions addressed in this research were:

Research Question 1: Can distinct 'learning orientation profiles' be derived using the variables of intrinsic learning motivation, extrinsic learning motivation, performance approach goal, performance avoidance goal and mastery goal?

Research Question 2: To what extent do these learning orientation profiles predict motivation and intent to transfer?

Research Question 3: Which programme elements, which can be adapted by educators and policy makers, differ significantly across the learning orientation profiles of adult learners? In other words, which 'malleable' programme factors could potentially be altered to enhance the learning orientation profiles of learners? The specific programme elements investigated were format of instruction (face-to-face, blended, online), social learning context (collaborative vs individual); choice; support; reward; and relevance.

Method

Participants

To broaden the sampling scope and generalise the results to the extent possible, close to 5,000 adult learners who were learning or had completed their learning within one polytechnic institution in Singapore were invited via email to participate in the study. Invitations were sent both to all students currently enrolled in the institution and to recent graduates. Of the learners invited to participate in the study, 431 provided full data sets that could be used to address the research questions posed. Socio-demographic information on these participants is presented in Table 1. There was no clear sampling bias in the responses received. That is, the distributions of responses received across the socio-demographic groups aligned broadly with those seen across all learners in the polytechnic. These learners might have been completing, or have completed, any number of short courses, part-time Diplomas, Specialist Diplomas or Advanced Diploma courses offered by the institution.

Design

This study was approved both by the authors' university and by the Internal Review Board of the participating polytechnic. Data for the study were collected as part of a larger study on the relationships between motivation and intent to transfer that was being conducted by the authors between September 2019 to December 2019. All participants completed the survey instrument through which the data for the study were collected in an online format, so that they could respond anonymously and have control over their progress whilst responding to the questions (Richman et al., 1999).

Instruments

The instruments used within the study were designed to assess participants' learning motivation; goal orientations; motivation to transfer learning; training design factors (e.g., whether the learners completed their courses face-to-face, online or in blended format); and situational factors (including the level of support they received to participate in the programme). All of the instruments used to measure these constructs were developed by the authors and, with the exception of items related to training design and some situational factors, have been validated and used in previous studies conducted as part of the broader research programme (Chung & Chapman, 2021a, b, c).

Learning motivation

This instrument was developed by the researchers and validated in a separate paper (Chung & Chapman, 2021a). The instrument included five items each for intrinsic and extrinsic motivation to learn. Items were written to correspond with the theoretical definitions as elaborated in Ryan and Deci's (2000) self-determination theory (SDT). Participants rated their agreement with each item on a 10-point scale

Table 1: Socio-demographic information for participating adult learners.

Baseline Characteristic	N	%
Age Bracket		
Not Indicated	43	9.98
20s	128	29.70
30s	141	32.71
40s	69	16.01
50s and above	50	11.60
Ethnicity		
Chinese	295	68.45
Indian	42	9.74
Malay	76	17.63
Others	18	4.18
Employment Status		
Full Time (at least 35 hours a week)	391	90.72
Part Time (less than 35 hours a week)	15	3.48
Unemployed	25	5.80
Educational Level		
Diploma and Professional Qualification	233	54.06
University	198	45.94
Purpose		
Reskill	146	33.87
Upskill	285	66.13
Gender		
Female	237	55.00
Male	194	45.00

Note. $N = 431$. Participants were on average 32.74 years old ($SD = 14.45$).

(1 = Not true at all to 10 = Extremely true). Example items included: "I saw the programme as a great way to improve my knowledge and skills" (intrinsic motivation); and "The programme will help me keep my job" (extrinsic motivation).

Learning goal orientations

This instrument included 15 items, which assessed three different dimensions of goal orientations: performance approach, performance avoidance and mastery (Chung & Chapman, 2021b). Example items included: "It is important for me to impress my lecturer(s)" (performance approach orientation); "It is important for me not to fall behind other learners in my group" (performance avoidance orientation); and "It is important for me to learn as much as possible from the programme" (mastery orientation). Subscale scores were computed by averaging the relevant item scores within subscales, and thus ranged from 1-10 (with higher scores indicating higher level of goal orientation).

Motivation to transfer learning

This instrument included 15 items, which assessed five different dimensions of motivation to transfer learning: self-efficacy, attainment value, intrinsic value, utility value and

cost (Chung & Chapman, 2021c). Example items include: "I believe I have the skills and abilities to apply what I have learnt from the programme" (self-efficacy); "I will be proud of myself for applying what I have learned" (attainment value); "I look forward to applying what I have learnt from this programme" (intrinsic value); "Applying what I have learnt from this programme will be appreciated by my supervisor" (utility value); and "I will have to sacrifice a lot of free time to apply what I have learnt from this programme" (cost). Subscale scores were computed by averaging the relevant item scores within subscales, and thus ranged from 1-10 (with higher scores indicating a higher level of motivation, scores for cost were reversed to align accordingly).

Intent to transfer learning

This was measured using a 4-item instrument in which participants were asked to indicate their intention to apply what they were learning in their programme to their workplaces (Chung & Chapman, 2021c). Participants rated their agreement with each of the four items on a 10-point scale (1 = Not true at all to 10 = Extremely true). An example item from this instrument was: "I intend to apply what I have learnt from the programme to work".

Transfer design

Two factors were measured within the category of training design: format of instruction and social learning context. For format of instruction, participants were asked to select only one response from the available options, "Mostly Blended", "Mostly Face-to-Face" and "Mostly Online". For social learning context, participants were asked "On a scale of 1 (Mostly Individual) to 10 (Mostly Collaborative), can you approximate how much time was allocated to learning individually versus collaboratively?".

Situational factors

Three situational factors were assessed within the study: choice (i.e., whether the learner felt that he or she had a choice in enrolling in the programme); rewards (i.e., whether the learner anticipated receiving some kind of external reward for completing the programme); and support (i.e., the level of support received by the learner for undertaking the programme from his or her supervisors/organisation, peers, and family/friends).

For choice, participants were asked to respond "Yes" or "No" to the question, "Did you attend the programme by choice?". For rewards, participants were asked, "What are the sources of monetary rewards or incentives you will receive for completing the programme?". Response options to the latter question were "Employer", "Employer and Government", "Government" and "None" (see Table 1). For relevance of the learning programme, participants were asked "On a scale of 1 (Not true at all) to 10 (Extremely true), how true is the following statement for you: 'This training programme is relevant to my work?'".

For support, an instrument developed by the researchers within a separate paper was used, which included ten items (Chung & Chapman, 2021a). These were designed to assess the level of support for learning received by participants from three different sources: supervisors/organisations (four items); peers (three items); and friends and family (three items). Example items included: "In my organisation, people are supportive of learning" (supervisor/organisational support); "My co-workers showed they supported me in my learning" (peer support); and "My friends and family encouraged me to learn" (support from friends and family). Again, subscale scores were computed by averaging the relevant item scores within subscales and thus ranged from 1-10 (with higher scores indicating a higher level of support).

Procedure

All invited adult learners completed the survey for the study online and were informed that they were free to withdraw at any time while they were completing this survey. Informed consent via an online agreement was also sought from all participants. To mitigate non-response bias, an explanation of the nature and purpose of the research was included in the introduction to the survey instrument. To overcome self-report bias, data on participants' employers were not collected to reduce the possibility that the results would be influenced by self-report biases.

Results

The results presented in this section are organised in line with the research questions posed for the study. A variety of different approaches was used to analyse the data collected in the study to address these questions. For each analysis performed, data screening evaluations were performed before any analysis was conducted to determine whether relevant underlying assumptions for the statistical procedures had been met. All of these analyses produced satisfactory results.

Research Question 1: Can distinct clusters of learning orientation profiles for adult learners be identified?

We used cluster analysis to generate learning orientation profiles of adult learners with differing levels of intrinsic versus extrinsic motivation to learn and goal orientations. By grouping the scores based on multiple characteristics to maximize between-group heterogeneity and within-group homogeneity, cluster analysis enabled us to capture multivariate interactions among the motivational and goal orientation dimensions. In this analysis, a hierarchical method (Ward's Method with Squared Euclidian Distances, see Hair et al., 1998), was used to identify a range of possible cluster solutions to consider. From amongst these, we chose the solution that optimised interpretability and percentage of variance accounted for in the final dimensions.

This approach suggested the presence of three distinct clusters based on the five motivational variables entered (intrinsic learning motivation, extrinsic learning motivation,

performance approach goals, performance avoidance goals, and mastery approach goals). To ensure that the three clusters were clearly differentiated, we then performed a multivariate analysis of variance (MANOVA) with cluster memberships as the independent variable and the five motivational variables used to derive the clusters as the dependent variables. All differences, both in the multivariate test and in follow-up univariate analyses, across the groups were significant at the < 0.001 level (see Table 2 and Figure 1). The three final clusters of learning orientation profiles included the following three groups:

- (1) One group with well-balanced positive z-scores on intrinsic and extrinsic motivation, as well as both performance and mastery goal orientations (labelled 'Idealists', $n = 158$);
- (2) One group with positive z-scores on extrinsic motivation, performance goal orientations, but negative z-scores on intrinsic motivation and mastery goal orientation (labelled 'Pragmatists', $n = 108$); and
- (3) One group with positive z-scores on intrinsic motivation and mastery goal orientation, but negative z-scores on extrinsic motivation and performance goal orientations (labelled 'Self-Actualists', $n = 169$).

Table 2: z-scores of the dimensions for the three-cluster solution.

Clusters/ Dimensions	Idealists ($n=158$)	Pragmatists ($n=108$)	Self-Actualists ($n=169$)	Univariate F ($p < .001$)
Intrinsic Motivation	.52	-1.16	.26	182.00
Extrinsic Motivation	.56	.26	-.67	93.77
Performance Approach	.83	.01	-.76	191.65
Performance Avoid	.58	.13	-.61	79.27
Mastery	.53	-1.22	.29	223.99

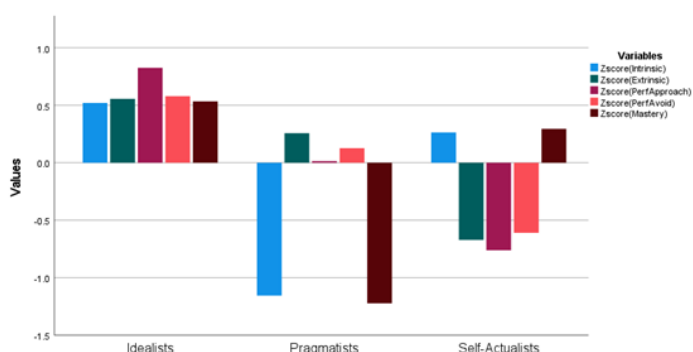


Figure 1: z-scores of the dimensions for the three-cluster solution.

Research Question 2: Did motivation and intent to transfer learning differ significantly across the learning orientation clusters?

To determine whether motivation and intent to transfer differed significantly across the profile groups, a multivariate analysis of variance (MANOVA) was performed on these scores, with profile group as the single independent variable. This indicated a significant effect of profile group on the linear composite variable, $\lambda = .37$, $F(6,852) = 92.42$, $p < .0001$, partial $\eta^2 = .39$. Follow-up univariate analyses of variance (ANOVAs) were then performed to determine which of the two individual measures contributed to this overall multivariate effect. Table 3 presents the results of the two ANOVAs, which indicated significant effects of profile group on both motivation and intent to transfer learning. Significant ($p < .02$, using a Bonferroni adjusted alpha level) mean differences between all three groups on both measures were also indicated in the Tukey post-hoc tests. As indicated in Figure 2, pragmatists were the least motivated to transfer their learning and had the lowest intent to do so, followed by Self-Actualists. Idealists were the most motivated to transfer their learning and accordingly also reported the highest level of transfer intent.

Table 3: Differences across profiles for motivation and intent to transfer learning.

Dependent variable	M	SD	$F(p < .001)$	η^2
Motivation to Transfer Learning	6.39	.94	62.95 (2,428)	.23
Intent to Transfer Learning	7.12	1.34	71.59 (2,428)	.25

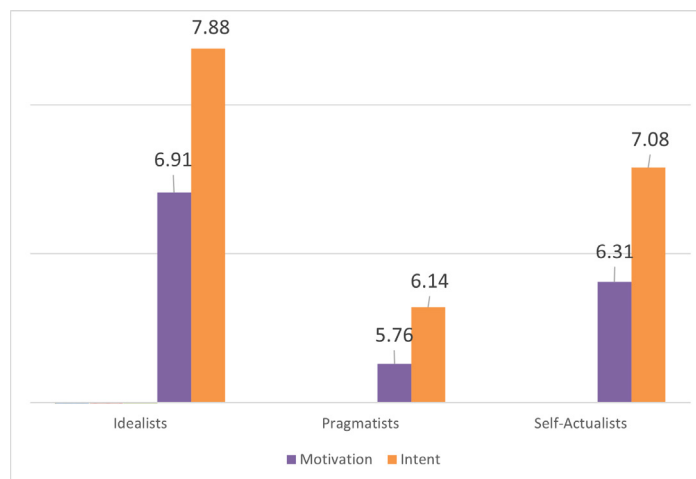


Figure 2: Mean score of motivation and intent to transfer learning.

Research Question 3: Did any of the training design or situational factors assessed differ across the learning orientation clusters?

Format of instruction and training context

To determine whether there were significant differences in the frequency with which members of the three profile groups had participated in the three instructional formats listed in the survey (i.e., blended, mostly face-to-face,

or mostly online), a chi-square test was performed. This indicated no significant relationship between profile group membership and format of instruction received, $\chi^2 = 7.81$, $p = .10$.

To explore differences between the profile groups in terms of the time spent in individual versus collaborative learning during their programmes, an ANOVA was performed, given that scores for this question ranged from 1-10. This analysis also indicated no significant differences across the groups on this measure, $F(2,428) = 2.09$, $p = .12$, $\eta^2 = .01$.

Choice

At least 84.26% of learners across all profiles reported that they had been given a choice in terms of whether to attend their learning programmes. A χ^2 test on the frequencies with which adults across the three learning orientation profiles reported having been given such a choice indicated that those who did not have a choice were significantly overrepresented within the Pragmatists profile group (15.74%), $\chi^2 = 10.28$, $p = .006$ (see Figure 3). In fact, almost three times as many adults who felt that they did not have a choice in whether to attend their learning programmes were found in this group, as compared with the Idealists and Self-Actualists profile groups.

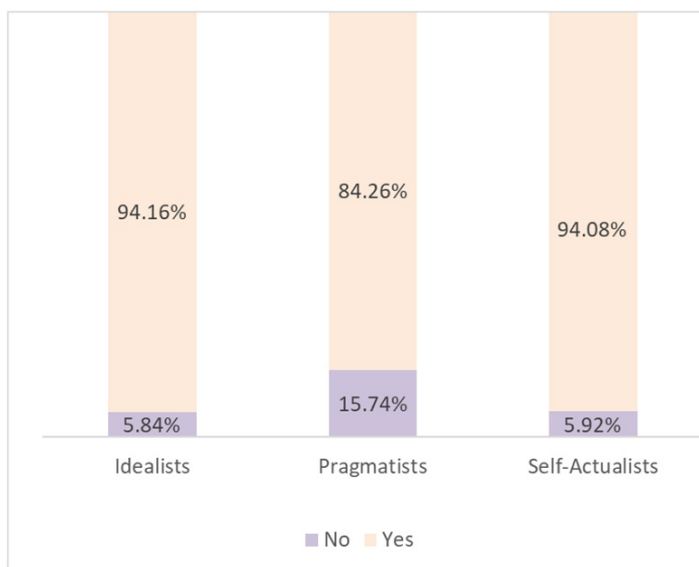


Figure 3: Choice to attend learning programme across profiles.

Reward

Slightly more than three-quarters of Self-Actualists reported that they would not receive any external rewards upon completion of their training programmes. On the other hand, in the Idealists and Pragmatists profile groups, approximately 40% to 45% indicated that they did anticipate receiving such rewards (see Figure 4). Two chi-square tests confirmed that this difference across the profile groups was significant, $\chi^2 \geq 22.38$, $p < .001$. Thus, a significantly higher proportion of learners in the Self-Actualists profile group did not anticipate receiving any external rewards for their participation in their learning programmes in comparison to

learners in the other two profile groups.

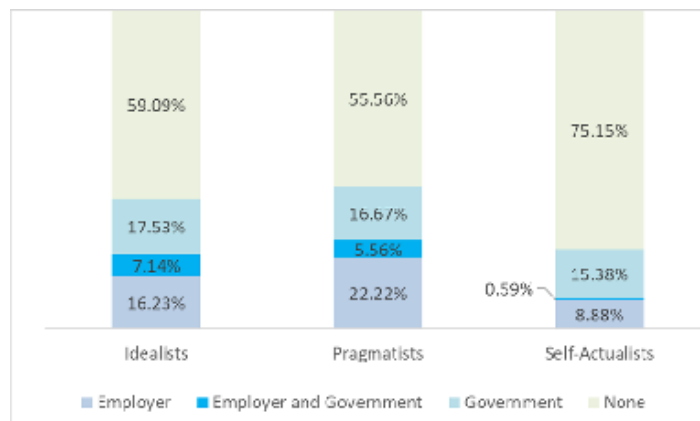


Figure 4: Source of reward upon completion of training programme.

Perceived relevance

An ANOVA was also undertaken to determine whether there were significant differences across the profile groups in responses to the question, "This training programme is relevant to my work". Scores on this question ranged from a low of 1 (Not true at all) to a high of 10 (Extremely true). This analysis indicated a significant overall difference in the mean responses across groups, $F(2,428) = 13.13$, $p < 0.001$, $\eta^2 = .06$. Post-hoc Tukey tests indicated that the differences between these groups were all significant at the .05 level. Based on the mean scores for this variable (see Figure 5), this result indicates that those in the Idealists profile group had the highest scores with respect to this question (i.e., perceived that their learning programmes were highly relevant to their work), followed by Self-Actualists and then Pragmatists.

Support

As for the support variables (supervisor/organisations, peer, friends and family) a MANOVA was performed in this case to explore differences across the profile groups. This analysis indicated a significant multivariate effect of profile group, $\lambda = .87$, $F(6,852) = 10.30$, $p < .0001$, $\eta^2 = .07$. Univariate ANOVAs indicated significant differences in mean scores that were attributable to cluster membership in terms of all three forms of support for learning: organisational support, $F(2,428) = 16.44$, $p < 0.001$, partial $\eta^2 = .07$; peer support; $F(2,428) = 17.14$, $p < 0.001$, partial $\eta^2 = .07$; and support from friends and family, $F(2,428) = 18.12$, $p < 0.001$, partial $\eta^2 = .08$. Based on Tukey post-hoc tests, all differences across the profile groups were significant ($p < .02$) on each of these support measures. From Figure 5, Idealists reported feeling that they received the highest level of support across all sources, followed by Pragmatists and then Self-Actualists.

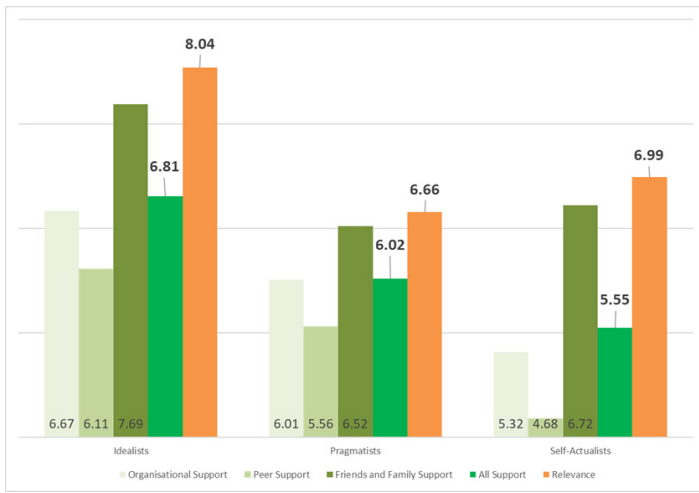


Figure 5: Mean score of training programme relevance and support.

Discussion

Results of this study indicated that adult learners could be grouped into three distinct clusters based on their extrinsic and intrinsic motivation levels, as well as the learning goals they adopted in confronting their learning tasks. The profile group assigned the label of 'Idealists' were the most positive in terms of both their learning motivations and their goal orientations. These profiles were also found to relate significantly to learners' motivation and intent to transfer learning. Idealists were found to have the highest levels of motivation and intent to transfer their learning to their workplaces. The next highest in terms of these outcome variables were Self-Actualists, followed by Pragmatists. These results suggest clearly that adults with different learning orientation profiles who attend further education programmes are likely to exhibit different levels of motivation and intent to transfer what they learn to the workplace. In light of this, it is vital to explore ways in which to promote positive learning orientations in such programmes so that employers can reap the full benefits that the SkillsFuture movement is intended to bring.

With respect to rewards for participation, the adult learners within the Self-Actualist profile reported receiving incentives significantly less frequently than did the other two profile groups. Given, however, that this group was not the highest in terms of motivation and intent to transfer, this result suggests that both intrinsic and extrinsic motivation may be beneficial in adult learners. The fact that those who fell into the Idealist group, who also had the highest level of motivation and intent to transfer, did not report low levels of extrinsic motivation, but instead, had higher scores than other adults across all of the learning profile variables, also suggests that extrinsic motivation per se is not a negative factor, provided that it is accompanied also by relatively high levels of intrinsic motivation. This result is aligned with the propositions of Frey and Osterloh (2000), who, as previously noted, posited that both intrinsic and extrinsic motivation are crucial for transfer to occur.

Other findings from this study also suggest a number of situational factors that differed significantly across the profile

groups. Whilst these differences cannot be interpreted to indicate a causal relationship between these variables and learning orientation profiles, they may still suggest ways in which productive learning orientation profiles may be encouraged within adult learning programmes. In particular, the results of the study indicated that the learning orientation profiles were associated significantly with whether learners were given a choice with respect to taking part in the learning; whether they received extrinsic rewards for participation; whether they perceived the training programme to be directly relevant for their work; and whether they received support for their learning from supervisors/organisations, peers, and friends and family. In light of these findings, employers may be in a position to alter the support and incentive schemes associated with further learning programmes to increase the likelihood that adult learners will adopt more positive learning orientation profiles in entering them.

For example, based on results for the adult learners who fell into the Idealists profile group, ensuring that learners have a choice in whether they participate and that they receive counselling on the courses that are most likely to be relevant to their own workplaces, are likely to increase motivation and intent to transfer. Perhaps more importantly, however, learners need to be provided with appropriate levels of support for their learning from supervisors and organisations generally, as well as from peers and friends/family members. While organisations and the Singapore government, more broadly, may have less control over support mechanisms such as friends and family members of adult learners, ensuring that peers are supportive by creating norms that favour the pursuit of further learning is one avenue through which organisations can potentially have an effect in this area.

Conclusion

The results of this study confirm that motivation and intent to transfer learning amongst adult learners can depend significantly on the learning orientation profiles that they adopt in approaching their programmes of study. The study also indicated that adult learning orientation profiles may be associated with various situational factors, including choice; rewards; perceived relevance of the training programme content; and the level of support that learners received. These findings could have significant policy implications for the SkillsFuture movement, and in particular, for the way in which incentive schemes are structured in connection with this movement.

Future research could seek to replicate these findings in samples of adult learners, both in other institutions within Singapore, and also outside of Singapore. Other possible contributing factors to the learning orientation profiles of adult learners could also be explored. Furthermore, future studies could seek to supplement any quantitative data collected with the use of qualitative research methods like interviews, focus groups, and/or case studies, to provide a more in-depth understanding of *how* the situational factors identified may impact adult learners' learning orientation profiles, as well as how the learning orientation profiles

might operate to moderate motivation and intent to transfer learning. It should be noted that this study focuses on the intent to transfer. It would be great to analyse if, indeed, the intent to transfer correlates with the actual transference in future studies. Equipped with such knowledge, educators and policymakers in Singapore would be better placed to determine how the benefits of the SkillsFuture initiative can be maximised and, thus, to ensure that returns on the financial investments made in this movement are realised.

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