



# A conditional time-varying multivariate latent growth curve model for the relationships between academics' servant leadership behavior, affective commitment, and job performance during the Covid-19 pandemic

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## Abstract

In our study, we investigated the change patterns in academics' servant leadership behavior and affective commitment during and after the first Covid-19 lockdown (April 2020–August 2020) in Malaysia. Furthermore, we evaluated the influence of academics' servant leadership behavior on job performance through affective commitment. We applied additional analyses to determine the degree to which the two former constructs are influenced by age and academic rank. To do so, we leveraged multivariate latent growth curve (LGC) modeling in analyzing the longitudinal data collected from 220 academics at three time points over a course of four months during the Covid-19 pandemic. Our results showed that, while servant leadership and affective commitment were stable over time, servant leadership was a driver of affective commitment and job performance. We also observed that affective commitment significantly mediated the relationship between academics' servant leadership behavior and job performance. Moreover, we found interindividual differences in servant leadership and affective commitment in terms of age and academic rank at the beginning of the Covid-19 lockdown. Our multi-disciplinary research is among the limited number of studies applying a rigorous, longitudinal approach to examine behaviors (i.e., servant leadership and job performance) and attitudes (i.e., affective commitment) during the Covid-19 pandemic in higher education research.

**Keywords** Servant leadership · Affective commitment · Job performance · Higher education · Covid-19 pandemic · Multivariate latent growth curve (LGC) modeling

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## 1 Introduction

The higher education sector contributes to the contemporary society's development (Cri-celli et al. 2018) as well as to a country's economic development through providing quality education (Baykan et al. 2018), in the short and in the long run (Qazi et al. 2014). The ongoing pandemic, however, changed a lot of practices in all sectors (Mihalache and Mihalache 2022), and higher education is no exception (Mok and Montgomery 2021). New and updated policies were implemented worldwide to maximize the academic communities' safety and to ensure that the process of quality teaching and learning was not adversely affected by the pandemic (Ghasemy and Elwood 2022). The global experience and diverse aspects included distinguish the Covid-19 pandemic from crises we have known so far (Mihalache & Mihalache 2022). Social distancing, despite its impact on peoples' subjective well-being (Damberg and Frömbling 2021), was encouraged by government policies with respect to lockdowns and working from home in many countries (Kumar et al. 2021). Wang et al. (2020), for example, found that psychological isolation, not physical isolation, adversely affects the emotional relationship of employees to their organizations.

We do not know much about human resource management during the Covid-19 pandemic (Adikaram et al. 2021), which put a lot of pressure on leaders (Collings et al. 2021). Nevertheless, overall, the implemented policies have proven to be effective, but leaders encountered many challenges in steering universities forward during these hard times (Perrotta 2021), adding to already recognized leadership challenges in different university types (Ghasemy et al. 2018). Drew (2010, pp. 61–62), for example, discovered five general challenges in academic leadership: (1) fiscal and people resources, (2) flexibility, creativity, and change-capability, (3) responding to competing tensions and remaining relevant, (4) maintaining academic quality, and (5) effective strategic leadership. Especially the last point indicates that universities were and still are in need of a relevant leadership philosophy enabling to tackle the pandemic-related, emerging barriers. Best practices in academic leadership responses to crises, as recommended by Fernandez and Shaw (2020), are building trust, distributing leadership, and clear communication; reminding us of a few of servant leadership's most important aspects.

Servant leadership provides the potential to address modern challenges, such as the ones of technological advancement, economic globalization, as well as disease and starvation (Parris and Peachey 2013). The study by Parris and Peachey (2013) could not have known about the Covid-19 pandemic as a disease, but servant leadership's role in guiding and engaging employees during Covid-19 (Hu et al. 2020) and in contexts of uncertainty (Correia de Sousa and van Dierendonck 2014) has already been highlighted in the literature. Furthermore, servant leadership can have a positive influence on organizational functioning and organizational outcomes on the individual as well as the team level (Lee et al. 2020; Rosa-Díaz et al. 2021). For instance, this leadership style is important in enhancing employees' creativity (Yang et al. 2019) and has huge relevance in institutions of higher learning (Ghasemy et al. 2022a, b; Wheeler 2012). Moreover, servant leadership helps in developing a caring and just society (Beck 2014). Higher education, as one of the major change agents in societies, needs leaders, who have a moral compass (Dean 2014). However, there is clearly a need for research on servant leadership practices in general (Zhao et al. 2016) as well as in educational institutions in particular (Eva et al. 2019).

Reforms in higher education change performance management practices (Kallio et al. 2016) and provide a need to reevaluate universities' leadership effectiveness and commitment among their employees (Yahaya and Ebrahim 2016). In addition, servant leadership

influences organizational outcomes, such as in-role performance (Liden et al. 2015) and affective commitment (Sendjaya et al. 2019). Moreover, organizational commitment itself was identified as an essential element for facilitating positive individual and organizational outcomes (DeCotiis and Summers 1987). Examples for such outcomes are organizational citizenship behavior (Meyer et al. 2002), organizational productivity and scholars' performance (Weiherl and Frost 2016), and also reduced negative outcomes, such as academics' turnover intention (Johnsrud and Rosser 2002).

Universities need to do the splits between complying to global quality standards and differentiation compared to their competitors (Kallio et al. 2016). The integral business of a university is research and teaching, yet, the quality of research performance sets a top university apart from its competitors (Ponnuswamy and Manohar 2016). Hence, universities put a growing emphasis on performance of academic units as well as individual academics (Manathunga et al. 2017), and also university lecturers feel the growing pressure to achieve satisfactory research performance (Tagliaventi and Carli 2019). Although research has given attention to different aspects of scholars' performance, a new interest has sparked regarding our understanding of what might foster or hamper the achievement of satisfying research performance (Tagliaventi and Carli 2019).

Given the current stressful Covid-19 pandemic, studying academics' performance becomes critical, since there is evidence that increased work-related stress depletes an individual's energy and attention, which, in turn, can result in lower job performance levels (Gilboa et al. 2008). Hence, considering servant leadership's importance and relevance in enhancing organizational commitment and job performance, and the lack of research on these relationships in academic organizations, we designed a longitudinal research study to examine those connections. We would like to note a few studies that are related to our research purpose. Yousef (2000) included organizational commitment as a mediator between leadership behavior and job performance in a multicultural, non-Western country. Yiing and Kamarul Zaman (2009) examined the relationship between leadership behavior and organizational commitment as well as between organizational commitment and job satisfaction/job performance by including organizational culture as a moderator among students and academic personnel in Malaysia. However, Yahaya and Ebrahim (2016) noted that only a few studies investigated the connection between leadership and organizational commitment in the higher education system of developing countries.

Given that Malaysia is a multicultural, non-Western country, and since the studies by Yousef (2000) and Yiing and Kamarul Zaman (2009) did not explicitly consider servant leadership, we believe this concept is worth exploring in the Malaysian higher education context. Malaysia is an educational hub in Southeast Asia (Ghasemy et al. 2021a; Lee 2014) and has several social/cultural similarities with its neighboring countries, such as Indonesia and Singapore. Especially less developed and developing countries benefit from the establishment of universities (Baykan et al. 2018; Qazi et al. 2014) and the Malaysian education sector has experienced notable transformation aiming to improve teaching and learning standards (Johari et al. 2018).

Consequently, we collected data from 220 academics in Malaysia at three time points—April 2020, the beginning of the lockdown (Time 1), June 2020, the end of the lockdown (Time 2), and August 2020, two months after the lockdown (Time 3). To analyze our data, we applied the multivariate latent growth curve (LGC) modeling methodology (Duncan et al. 2006). We formulated the following two research questions: (1) *To what extent does academics' servant leadership behavior, directly, and indirectly through affective commitment, influence job performance over time?* and (2) *What influence do academic rank and age have on the means and change rates of servant leadership and affective commitment?*

Subsequently, our analysis produced the following answers and findings: (1) we observed that academics' servant leadership behavior and affective commitment were stable and contributed to job performance during our assessment period, (2) we found affective commitment to partially mediate the relationship between servant leadership and job performance, and (3) we noted that, at the beginning of the lockdown, age had an influence on servant leadership behavior, while academic rank had an impact on affective commitment. Hence, we contribute to research and practice by providing insights into the less researched construct of servant leadership, the important context of the Malaysian higher education system, and the influence of the Covid-19 pandemic. Notably, higher education harmonization policies and initiatives have been implemented in Southeast Asia (Morshidi et al. 2016; Yavaprabhas 2014). Therefore, we expect the results obtained in the Malaysian context to be transferable to similar higher education contexts.

Our research study is structured as follows: first, we provide the theoretical background to derive our research model. Second, we present our methodology. Third, we show our results and, consequently, discuss them in theoretical and practical terms. Last, we conclude with our limitations and further research suggestions.

## 2 Theoretical background

### 2.1 Servant leadership

Servant leadership is a trait-based leadership theory postulating that effective leaders embody a key set of desirable characteristics that, subject to what is agreed on as being socially desirable in a particular place and time, changes across contexts (Dean 2014). This leadership concept was developed in a low power distance country, though the meta-analysis by Lee et al. (2020) showed that servant leadership can also be efficiently exerted in cultures coined by higher power distance. Hence, the meaning of servant leadership might differ between countries, but this concept is, nevertheless, widely applicable across different contexts (Parris and Peachey 2013). Furthermore, servant leadership stands in contrast to traditional leadership practices, in that the leader is not the head of the command chain (Rosa-Díaz et al. 2021), but puts the followers first (Beck 2014) and aims to primarily serve them instead of solely leading them (Sendjaya and Sarros 2002). Since servant leaders' main aspiration is serving other people, they, thereby, promote a sharing and caring climate among their followers (Greenleaf 2002), enable mutual trust building by prioritizing the followers needs' fulfilment (Schaubroeck et al. 2011), and inspire them to exercise leadership responsibilities (Dean 2014; Ghasemy et al. 2022a, b; Graham 1991). Hence, it is not only the leader who influences the followers, but also the followers who influence the leader (Eva et al. 2019; Graham 1991).

### 2.2 Organizational commitment

Commitment, as one of the widely studied classical concepts over a few decades, is a core component of an organization's life, which builds on met work expectations (DeCotiis and Summers 1987; Meyer and Allen 1991) and is usually described as being relatively stable and lasting (Gautam et al. 2004; Porter et al. 1974). In general, researchers distinguish between behavioral and attitudinal commitment (Coopey and Hartley 1991; Meyer and Allen 1991; Mowday et al. 1979). Behavioral commitment includes such behaviors

that describe the employee's involvement in an organization beyond the limits of expected behaviors (DeCotiis and Summers 1987). Within the attitudinal approach, organizational commitment is a concept that describes an employee's identification with and involvement in their organizations (Porter et al. 1974). Early on, organizational commitment was conceptualized as a one-dimensional construct (Mowday 1998).

However, several research studies describe organizational commitment as being multidimensional in nature (Nazir et al. 2016). The probably most used conceptualization of organizational commitment is the three-component model by Meyer and Allen (1991), who distinguished between affective, normative, and continuance commitment (Bashir and Gani 2020). Normative commitment includes feelings of obligation to stay with an organization, while continuance commitment considers the costs of leaving an organization and describes the need to remain with the company (Meyer and Allen 1991; Meyer and Smith 2000; Mowday 1998). Therein, normative commitment and continuance commitment are somewhat overlapping concepts (Mercurio 2015). Affective commitment is an affective orientation toward the organization and a desire to remain, which includes three facets, namely emotional attachment, identification, and involvement (Meyer and Allen 1991; Meyer and Smith 2000; Mowday 1998). The three-component approach combines attitudinal and behavioral aspects in a complementary way; hence, commitment can be better described as a psychological state (Mercurio 2015; Meyer and Allen 1991). Furthermore, the three components can all be perceived at the same time (Meyer and Allen 1991) and are influenced by human resource management (HRM) policies and practices (Meyer and Smith 2000). Consequently, this concept receives a core position in human resource management research (Coopery and Hartley 1991). In our study, we focus on affective commitment as organizational commitment's core essence (Mercurio 2015).

### 2.3 Job performance

Job performance contributes to achieving organizational goals that are part of the business strategy; hence, it determines and is a key performance indicator of an organization's success (Alessandri et al. 2020; Masa'deh et al. 2017). In the higher education context, there is a growing emphasis on performance, with a strong focus on the performance of academic units and individual academics (Kallio et al. 2016; Manathunga et al. 2017). More specifically, different aspects of performance in academic settings have been addressed, such as research performance and knowledge performance (e.g., Ponnuswamy and Manohar (2016)). In addition, in a recent comparative study in the context of Malaysian and Japanese higher education systems, Ghasemy et al. (2022c) focused on different sustainability-related issues, such as Education for Sustainability (EfS) effective in-role performance with five dimensions that include personal and interpersonal outcomes, learning and teaching outcomes, recognition and reputation, financial performance, and effective implementation. It is noteworthy that, due to the introduction of the New Public Management practices, university governance has applied performance management, as a means for output control, more sophisticatedly (Bleiklie and Lange 2010). The overarching objective is to motivate scholars in presetting goals and achieving high performance (Weiherl and Frost 2016). It is also widely acknowledged that, in order to become sustainable in economic turbulences, it is imperative for universities to increase their performance (Yaakub and Mohamed 2019). Nevertheless, there is evidence that private universities need strategic agility to realize superior organizational performance for future business sustainability

(Lyn Chan and Muthuveloo 2019). In our study, we focused on a generic conceptualization of job performance.

## 2.4 The servant leadership-commitment-performance nexus

### 2.4.1 Servant leadership and affective commitment

Servant leaders promote commitment to organizational goals and support employees to achieve them (Stouten & Liden 2020). As elaborated by Coetzer et al. (2017), work engagement, organizational citizenship behaviors, creativity and innovation, and organizational commitment were identified as a few of servant leadership's positive individual-level outcomes. Also others studies found evidence for the effect of servant leadership behaviors on organizational commitment (Jaramillo et al. 2009), and more specifically on affective commitment (Lapointe and Vandenberghe 2018; Miao et al. 2014). The relationship between servant leadership and affective commitment has also been shown among academics (Aboramadan et al. 2020).

### 2.4.2 Servant leadership and job performance

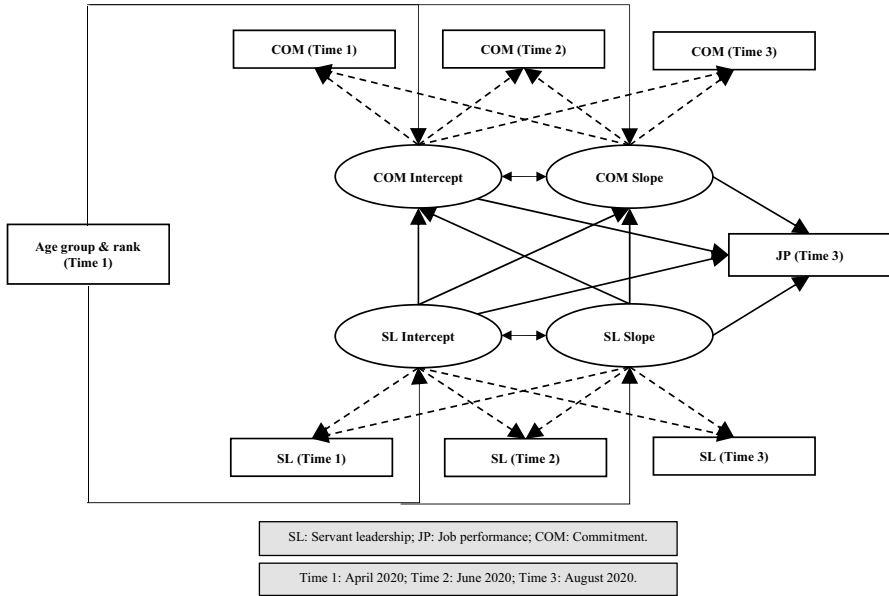
Servant leaders keep sustainable performance high (Eva et al. 2019), in that enhancing employees' well-being facilitates long-term organizational goals (Hoch et al. 2018). Therefore, servant leaders set goals to enhance employees' performance and to reduce their loafing behavior (Stouten and Liden 2020). Moreover, the studies by Saleem et al. (2020) and Liden et al. (2014) revealed that servant leadership predicts subordinates' performance. Notably, servant leadership can have an influence on several performance levels and types, such as in-role performance (Liden et al. 2015), team performance (Hu and Liden 2011), and sales performance (Coetzer et al. 2017). Also the meta-analysis by Lee et al. (2020) showed strong effects of servant leadership on individuals' performance.

### 2.4.3 Affective commitment and job performance

As Meyer et al. (2002) noted, affective commitment improves job performance. Organizational commitment's positive influence on job performance has been examined in several contexts and countries, such as among automobile dealership employees (Lam and Liu 2014), an insurance company in China (Fu and Deshpande 2014), accounting professionals in Taiwan and the USA (Chen et al. 2006), or a limited liability company in Indonesia (Hendri Muhammad 2019). Also the meta-analysis by Ricketta (2002) found a positive correlation between attitudinal organizational commitment and job performance. Moreover, organizational commitment's mediating role between servant leadership behavior and job performance were confirmed in the academic context (Aboramadan et al. 2020).

### 2.4.4 Age and academic rank as time-invariant covariates

In our LGC model, we considered age and academic rank as two time-invariant covariates to explain the variability around the growth parameters of servant leadership and affective commitment. The inclusion of age and academic rank is based on their role in influencing leadership behaviors and organizational outcomes. For instance, Hong et al. (2016) found a positive relationship between consideration leadership and affective commitment as well



**Fig. 1** Theoretical framework with time-invariant covariates, time-varying covariates, and the distal outcome. Dashed lines indicate fixed parameters

as a positive moderating effect of the employees’ rank. In another study, Chen and Francesco (2000) noted position to positively influence employees’ organizational commitment. In addition, Allen and Meyer (1993) revealed that affective and normative commitment increased with the employees’ age. Also the meta-analysis by Kooij et al. (2010) found age to have a moderating effect on the relationship between different human resource management practices and work-related attitudes (i.e., affective commitment and job satisfaction).

### 2.5 Our theoretical longitudinal model

In light of the above, we proposed a longitudinal theoretical model, which is depicted in Fig. 1. Our model aimed to explain (1) the extent to which the growth parameters of academics’ servant leadership behaviors (i.e., mean and change rate) influence their job performance through affective commitment’s growth parameters, and (2) the way through which academics’ age and rank explain the variability in their servant leadership behaviors’ and affective commitments’ means and change rates over time.

## 3 Method

### 3.1 Research design and analytical procedure

In this longitudinal, quantitative inquiry, we were interested in studying the means and change rates in servant leadership and affective commitment as well as the extent to which servant leadership behavior, as a time-varying covariate, influenced job

performance through affective commitment over time. We assessed servant leadership and affective commitment at Time 1, Time 2, and Time 3, and job performance solely at Time 3. We were also interested in assessing the impact of academics' age and rank on servant leadership's and affective commitment's growth trajectories. Thus, we applied multivariate LGC modeling to address all these issues (Duncan et al. 2006) and employed EQS 6.4 (Bentler 2006; Bentler and Wu 2018) to screen and analyze our data.

### 3.2 Measures and covariates

We measured all our items with symmetric and equidistant Likert scales (Ghasemy et al. 2020) anchored by 1 (strongly disagree) to 5 (strongly agree). With respect to servant leadership, we employed the seven-item servant leadership scale (SL-7), which was developed and validated by Liden et al. (2015). This scale is one of the recommended scales by Eva et al. (2019), due to its inclusion of *creating value for the community* and *conceptual skills*, as well as its easiness of application and parsimony, and has been used in other studies before (e.g., Sun et al. (2019)). Given that the original items were formulated in the third-person voice, we rephrased the items to the first-person voice. Based on our scale, the minimum score for servant leadership was 7, the mean score was 21, and the maximum score was 35. Next, we measured academics' affective commitment using the six-item scale constructed by Rhoades et al. (2001). We changed the term *organization* to *institution* for making the items consistent with the higher education context. Based on our instrument, the minimum affective commitment score was 6, the mean score was 18, and the maximum score was 30. Last, we used the seven-item scale of employee performance of in-role behavior (IRB) developed by Williams and Anderson (1991) to measure academics' job performance. Williams and Anderson (1991) extended the scale of in-role performance by O'Reilly and Chatman (1986) with other items that recognized required and formal job behaviors. Of the items used, two had to be reverse-coded as indicated by Williams and Anderson (1991). The minimum score for job performance was 7, the mean score was 21, and the maximum score was 35.

Age group was measured as an ordinal variable with seven categories (0 = 35 and below, 1 = 36–40, 2 = 41–45, 3 = 46–50, 4 = 51–55, 5 = 56–60, and 6 = 61 and above) and academic rank, as another ordinal variable, had four categories (0 = lecturer, 1 = senior lecturer, 2 = associate professor, and 3 = professor). Consistent with the discussions made by Rhemtulla et al. (2012) and Byrne (2016), we considered age group with seven categories as a continuous variable with linear effects. We also considered academic rank as a continuous variable based on the discussions of Bentler and Chou (1987, p. 88), who argued that, for normally distributed categorical variables, “continuous methods can be used with little worry when a variable has four or more categories”. In our study, academic rank with four categories was normally distributed ( $p < 0.05$ ) as evidenced by the  $Z_{\text{Skewness}} = 0.971$  and  $Z_{\text{Kurtosis}} = -1.56$ . Relatedly, as noted by Pasta (2009) and Williams (2020), it is usually safe to treat ordinal variables as continuous, even when the spacing is not equal across categories. These arguments provide us with more substantial support for treating age group and academic rank as continuous variables with linear effects.



### 3.3 Population and sample

Malaysia's higher education system consists of public and private sectors, which can be further divided into public universities, polytechnics, and community colleges for the public sector, and private universities, private university colleges, and private colleges for the private sector. Our study's population are academics employed in Malaysian public universities and polytechnics as well as private universities.

The Malaysian government implemented the first strict lockdown on 18th March 2020 and extended it three times until 12th May 2020 to prevent the Coronavirus from spreading. Since, at this time, the effects of the Covid-19 pandemic were unknown to everyone and this was the first lockdown implemented in Malaysia, we expected these measures to have a strong impact on and elicit a strong arousal in people, including academics. Consequently, we administered our instrument among academics via an online survey distribution platform in April 2020 (beginning of the lockdown) and received 707 responses of which, due to completeness rate, we considered 698 surveys suitable for further analyses. During the next two waves (June and August 2020), we distributed our survey among those 698 academics, who had sufficiently completed the survey earlier. Subsequently, we received 326 and 298 completed surveys. Due to subject attrition, we solely focused on the complete data collected from 220 academics in all three waves.<sup>1</sup>

In our sample of  $N=220$ , 122 academics (55.5%) were female and 98 academics (44.5%) were male. 39 academics (17.7%) were single, 172 academics (78.2%) were married, and 9 academics (4.1%) preferred not to indicate their marital status. With respect to the administrative positions, 99 academics (45%) held university leadership/administrative positions (e.g., department head, dean, or director) and 121 academics (55%) did not hold leadership/administrative positions. In terms of academic rank, 55 academics (25%) were lecturers, 89 academics (40.5%) were senior lecturers, 43 academics (19.5%) were associate professors, and 33 academics (15%) were professors. Finally, the sampled academics' average age was 46.38 ( $SD=8.92$ ). It is important to highlight that leadership behaviors can be practiced by anyone; hence, academics (e.g., professors) without formal leadership/administrative positions can also be seen as leaders of academic organizations (Evans 2017).

### 3.4 Data screening

During data treatment, we first focused on the missing values. Our initial examination showed that less than 1% of values were missing per indicator. Thus, in line with the guiding principles by Tabachnick and Fidell (2013), we replaced them with the median of the measured indicators. As the next step in data screening, we specified our unconditional multivariate LGC model and ran it to identify multivariate outliers and to assess the multivariate normality assumption. We detected 10 multivariate outliers in our data and removed them from our dataset. This decreased the normalized estimate of multivariate kurtosis (Mardia 1974) to 4.98. We assumed our data to be multivariate normal since the normalized estimate of multivariate kurtosis was below 5 (Bentler 2006). Further, we did not face any problems regarding the LGC sample size requirements because sample sizes

<sup>1</sup> This dataset has been partially used in Ghasemy and Frömbling (2022, in press) and the conference proceedings of Ghasemy (2022) and Ghasemy and Frömbling (2022).

of more than 200 at each time point are viewed as being acceptable for a LGC modeling analysis (Byrne 2006), and our final sample size was  $N=210$ . Appendix A1 displays the sample correlation matrix of the longitudinal data.

## 4 Results

### 4.1 The unconditional time-varying multivariate LGC model

The initial estimation of our multivariate LGC model showed that the mean ( $\beta=0.380$ ,  $z=0.292$ ) and variance ( $\zeta_{D4} = <0.001$ ,  $z_{D4}= <0.001$ ) of affective commitment's slope factor were not significant. Therefore, we removed the slope factor and re-estimated the model. The results showed that the mean ( $\beta=-0.080$ ,  $z=-0.961$ ) and variance ( $\zeta_{D2} = 0.147$ ,  $z_{D2}=0.366$ ) of servant leadership's slope factor were not significant either. Consequently, we removed this factor and estimated the model again. We present the re-estimation results in Table 1.

Based on these results, we observed that the mean values of servant leadership ( $\mu=28.354$ ) and affective commitment<sup>2</sup> ( $\mu=24.107$ ) were constant across the four months under scrutiny. These values were above the average scores obtained based on the instruments used to collect the data. In addition, the positive causal association between servant leadership and affective commitment ( $\beta=0.529$ ) indicated that a one unit change in servant leadership was associated with a 0.529 unit change in affective commitment. Moreover, the significance of the disturbance terms' variances ( $\zeta_{D1}=6.665$ ,  $z_{D1}=9.009$  and  $\zeta_{D3}=14.203$ ,  $z_{D3}=9.420$ ) provided us with evidence for interindividual differences in the means of servant leadership and affective commitment at Time 1 (April 2020). Turning to the residual variances section in Table 1, we observed that all random measurement error variances of servant leadership and affective commitment were relatively homoscedastic or, in other words, consistent over time (Byrne and Crombie 2003). Also, due to a lack of change in servant leadership and affective commitment, we did not test the linearity of the growth trajectories since, technically, this is not an assumption, but rather a central testable hypothesis in LGC modeling (Preacher et al. 2008).

### 4.2 The conditional time-varying multivariate LGC model with a distal outcome

Given the significance of the disturbance variances (i.e.,  $\zeta_{D1}$  and  $\zeta_{D3}$ ) in our model and the observed evidence for interindividual differences (Byrne 2006), we added age group and academic rank, as two time-invariant predictors, to investigate their role in explaining interindividual differences in the means of affective commitment and servant leadership at Time 1. We moved one step further and added job performance, measured at Time 3, as a distal outcome of servant leadership behavior and affective commitment to our model. Importantly, since the impact of the mean factors of affective commitment and servant leadership, measured at three time points, on job performance, measured at Time 3, was desired, we had partial temporal precedence in our analysis.

The estimation results revealed that academic rank was not a significant predictor of servant leadership's intercept factor ( $\beta=0.309$ ,  $z=1.419$ ). In the interest of parsimony, we

<sup>2</sup> The mean value of affective commitment =  $(28.354 \times 0.529) + 9.108 = 24.107$ .

**Table 1** Results based on the unconditional multivariate LGC model

Variable	Servant leadership			Affective commitment			z value
	Parameter	Estimate	Standard error	Parameter	Estimate	Standard error	
<i>Regression coefficients</i>							
Factors regressed on the constant	F1, V999	28.354	0.190	F3, V999	9.108	3.187	2.858
Factors regressed on other factors				F3, F1	0.529	0.112	4.722
<i>Factor disturbance terms</i>							
Intercept	D1	6.665	0.740	D3	14.203	1.508	9.420
<i>Error term variances</i>							
Time 1 (April 2020)	E3	3.894	0.479	E6	3.783	0.495	7.641
Time 2 (June 2020)	E4	2.377	0.355	E7	2.428	0.397	6.122
Time 3 (August 2020)	E5	2.109	0.336	E8	2.657	0.412	6.455

Note 1. Fit indices based on the covariance matrix only:  $\chi^2(16) = 27.43$ , NFI = 0.976, NNFI = 0.985, CFI = 0.988, IFI = 0.988, MFI = 0.974, SRMR = 0.027, RMSEA = 0.067 [0.023, 0.107]. Note 2. Fit indices based on the covariance matrix and mean values: MFI = 0.973, RMSEA = 0.058 [0.014, 0.094]. Note 3. The contents of the table are based on the EQS notation

<sup>a</sup>z<sub>i</sub> values > 1.96 indicate statistical significance ( $p < 0.05$ )

removed this path and re-estimated the model. Our observation showed that age group was not a significant predictor of affective commitment ( $\beta=0.514$ ,  $z=1.630$ ) either. In addition, the evaluation of the Lagrange Multiplier (LM) test results to identify misspecifications in the model showed that two error covariances, namely the covariances between affective commitment and servant leadership's residual variances at Time 1 and at Time 3, should be freely estimated. Consequently, we modified the model by removing the link between age group and affective commitment as well as adding the two meaningful error covariances. Moreover, due to the lack of evidence regarding change in servant leadership behavior and affective commitment, we specified a correlation between the residuals of affective commitment and servant leadership measured at Time 2, and imposed equality constraints on all the three specified residual covariances. We present the complete set of estimation results in Table 2, which shows a very good fit of the model to the data, and a summarized version of the results in Fig. 2.

As displayed in Table 2, adding age, academic rank, and job performance to the model slightly changed the statistics. Specifically, controlling for academic rank and age, servant leadership's mean value<sup>3</sup> was  $\mu=28.360$  and affective commitment's mean value<sup>4</sup> was  $\mu=24.103$ . Regarding servant leadership's impact on affective commitment, we identified a significant causal relationship ( $\beta=0.429$ ,  $z=3.862$ ), implying that the higher the level of servant leadership behavior, the higher the level of affective commitment. More specifically, our results showed that a one unit change in servant leadership behavior was associated with a 0.429 unit change in affective commitment. Focusing on our distal outcome (i.e., job performance measured at Time 3 with a mean<sup>5</sup> of  $\mu=29.910$ ), our results uncovered that, on average, a one unit change in servant leadership was associated with a 0.501 unit change in job performance and a one unit change in affective commitment was associated with a 0.156 unit change in our distal outcome. Moreover, all the mean scores were above the average scores obtained by our instruments. To test the indirect effect of servant leadership behavior on job performance through affective commitment, we performed a bootstrapping test with 1,000 subsamples. Our analysis uncovered that the indirect effect of interest ( $\beta=0.067$ , *s.e.* $=0.029$ ,  $z=2.295$ , standardized estimate $=0.053$ ) was statistically significant. Given the significance of servant leadership's direct effect on job performance, we concluded that affective commitment partially mediated the relationship between the predictor and the outcome.

We also observed that academic rank's effect on affective commitment's intercept factor ( $\beta=0.792$ ,  $z=2.962$ ) was positive and statistically significant, indicating that a one unit change in academic rank was associated with a 0.792 unit increase in affective commitment. Given the coding mechanism in academic rank, we concluded that professors' and lecturers' affective commitment were at the highest and the lowest level, respectively.

Our analysis showed that the effect of age on servant leadership's intercept factor was positive and statistically significant ( $\beta=0.400$ ,  $z=3.876$ ) as well. This highlighted that older academics were more successful in exhibiting servant leadership behaviors at the beginning of the lockdown (Time 1) than their younger counterparts. More specifically, a one unit change in age group was associated with a 0.400 unit of increment in the servant leadership score.

<sup>3</sup> The mean value of servant leadership  $= 27.308 + (2.629 \times 0.400) = 28.360$ .

<sup>4</sup> The mean value of affective commitment  $= (27.308 \times 0.429) + 10.941 + (2.629 \times 0.400 \times 0.429) + (1.257 \times 0.792) = 24.103$ .

<sup>5</sup> The mean value of job performance  $= (10.941 \times 0.156) + (27.308 \times 0.429 \times 0.156) + 11.942 + (27.308 \times 0.501) + (2.629 \times 0.400 \times 0.501) + (2.629 \times 0.400 \times 0.429 \times 0.156) + (1.257 \times 0.792 \times 0.156) = 29.910$ .

**Table 2** Results based on the conditional time-varying multivariate LGC model

Variable	Servant leadership			Affective commitment				
	Parameter	Estimate	Standard error	z value <sup>a</sup>	Parameter	Estimate	Standard error	z value
<i>Regression coefficients</i>								
Factors regressed on the constant	F1, V999	27.308	0.327	83.466	F3, V999	10.941	3.125	3.501
Factors regressed on other factors					F3, F1	0.429	0.111	3.862
Factors regressed on time-invariant predictors	F1, Age	0.400	0.103	3.876	F3, Rank	0.792	0.267	2.962
Distal outcome regressed on the factors	JP3, F1	0.501	0.086	5.824	JP3, F3	0.156	0.054	2.902
Distal outcome regressed on the constant	JP3, V999	11.942	2.382	5.014				
Time-invariant predictors regressed on the constant	Age, V999	2.629	0.123	21.400				
	Rank, V999	1.257	0.070	18.040				
<i>Factor disturbance variances</i>								
Intercept	D1	6.165	0.690	8.930	D3	13.833	1.447	9.557
<i>Residual variances</i>								
Time 1 (April 2020)	E3	3.795	0.456	8.322	E6	3.738	0.479	7.806
Time 2 (June 2020)	E4	2.615	0.356	7.335	E7	2.560	0.391	6.542
Time 3 (August 2020)	E5	1.958	0.310	6.322	E8	2.554	0.391	6.532
Age at Time 1	E1	3.153	0.308	10.223				
Academic rank at Time 1	E2	1.015	0.099	10.223				
JP3 (Job performance measured at Time 3)	E9	7.907	0.800	9.886				
<i>Residual covariances</i>								
Age and academic rank	E1, E2	0.995	0.142	7.030				
<i>Between-domain residual covariances</i>								
Affective commitment and servant leadership (Time 1)	E3, E6	0.550	0.137	4.006				
Affective commitment and servant leadership (Time 2)	E4, E7	0.550	0.137	4.006				
Affective commitment and servant leadership (Time 3)	E5, E8	0.550	0.137	4.006				

Note 1. Fit indices based on the covariance matrix only:  $\chi^2(31)=40.80$ , NFI=0.968, NNFI=0.988, CFI=0.991, IFI=0.991, MFI=0.976, GFI=0.962, AGFI=0.936, SRMR=0.043, RMSEA=0.042 [0.000, 0.073]. Note 2. Fit indices based on the covariance matrix and mean values: MFI=0.977, RMSEA=0.039 [0.000, 0.068]. Note 3. The contents of the table are based on the EQS notation. V999 is the constant variable in EQS and has been added to the model to compute the means and intercepts of the variables/factors. The correlation between age and academic rank residual variances was  $r=0.556$ . The correlation between affective commitment and servant leadership's residual variances at Time 1 was  $r=0.146$ . The correlation between affective commitment and servant leadership's residual variances at Time 2 was  $r=0.213$ . The correlation between affective commitment and servant leadership's residual variances at Time 3 was  $r=0.246$

<sup>a</sup>|z values| > 1.96 indicate statistical significance ( $p < 0.05$ )

With respect to the error variances, our analysis uncovered that the factors' disturbance variances and all the observed variables' residual variances were statistically significant as well. Finally, regarding the covariances, we observed a relatively strong positive correlation between age group and academic rank ( $r=0.556$ ). In addition, we observed

correlations between servant leadership and affective commitment's residual variances at Time 1 ( $r=0.146$ ), Time 2 ( $r=0.213$ ), and Time 3 ( $r=0.246$ ). Finally, the EQS code, which contains the sample covariance matrix and means of the variables that can be used to estimate the final model, appears in Appendix A2.

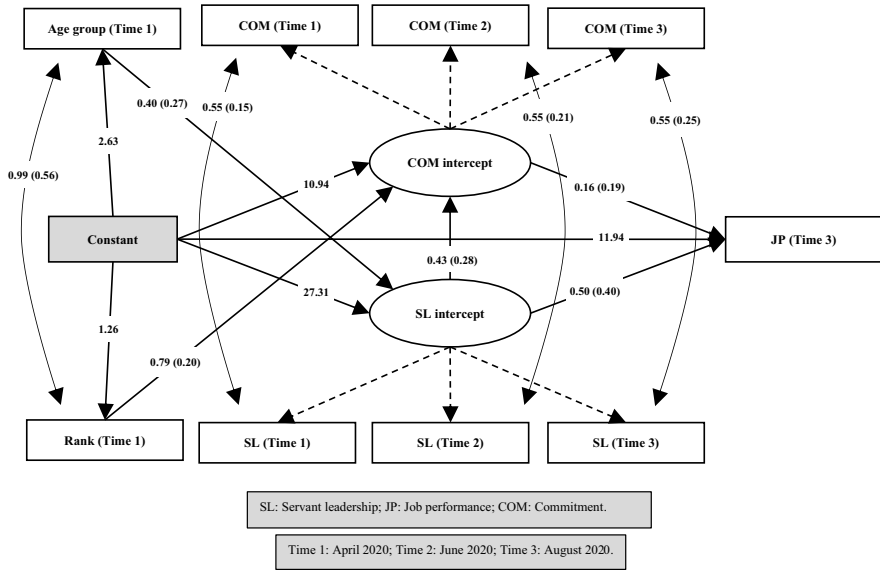
## 5 Discussion and implications

The focus of our study lies on servant leadership, since, in addition to providing support, supplies, and resources, such leaders help employees grow and develop in their profession, while simultaneously encouraging them to independently manage their working processes (Stouten and Liden 2020). Specifically, we developed and verified a longitudinal model that defines the relationship between servant leadership, affective commitment, job performance, age, and academic rank during the Covid-19 pandemic in the Malaysian higher education sector.

In our results, we did not observe change in servant leadership and affective commitment, indicating their stability over time. Possibly, this finding was related to the implemented Covid-19 policies, which successfully kept the mean score of affective commitment and servant leadership high (above the average scores obtained based on our instruments) and relatively stable. Examples of these policies and practices include sharing accurate information with stakeholders, timely decision-making, providing standard operating procedures for students and staff, and empowering deans and department heads to make operational decisions during the lockdown. Nevertheless, it might also be that organizational commitment, in general, is rather stable and lasting (Gautam et al. 2004; Porter et al. 1974). Solinger et al. (2015) noted that especially a person's affective information related to attitudes changes more slowly than their cognitive or behavioral information. However, from a theoretical and empirical standpoint, there might also be other factors that could have prevented servant leadership and affective commitment from declining during our assessment.

Overall, our findings confirm previous research, in that the model shows that servant leadership is a good driver for affective commitment (Aboramadan et al. 2020) and job performance (Liden et al. 2014). Affective commitment's positive effect on job/in-role performance is also well in line with previous research (Lam and Liu 2014). Notably, these findings even hold during the Covid-19 pandemic. Also Mihalache and Mihalache (2022) noted that supervisor accessibility is one of the support forms that can help with uncertainty during the pandemic and increase affective commitment. Gray et al. (2022, in press), however, noted that not all attempted support behavior is actually helpful and identified nine themes that should be considered for reasonable support during crises, namely autonomy, communication, changes, personal resources, safety, time, tone, work equipment, and workload.

Specifically, based on our final model, we observed that a one unit change in servant leadership was associated with a 0.429 unit of change in affective commitment and the standardized coefficient to represent this effect was 0.277. Also, the comparison of the standardized effects of servant leadership and affective commitment on job performance showed that servant leadership's effect on job performance (0.400) was two times larger than the one of affective commitment (0.193). In addition, we confirmed affective commitment's mediating role in the relationship between servant leadership behavior and job performance. Indeed, servant leaders put trust in their employees and empower them to



**Fig. 2** The final model. The fixed and constraints parameters are represented with dashed lines and selected standardized values are displayed in parentheses. Variances are not displayed in this figure

take responsibility for their decisions, which, at the same time, holds employees accountable for their work efforts (Stouten and Liden 2020). Furthermore, Cipriano (2011) argued that in a collegial atmosphere in which lecturers trust and respect one another, those who are engaged in collaboration can deliver better performance than those who work in isolation. To tackle traditional challenges (e.g., effective staff, financial, and time management) (Ghasemy et al. 2018) and pandemic-related challenges (e.g., ensuring the system’s agility and resilience, transforming the educational environment, and exploring and identifying new digital opportunities), servant leadership behaviors might be the right choice. Therefore, policies in academic settings should focus on fostering and nurturing servant behaviors, such as empowering academics, encouraging academics to behave ethically, developing academics’ conceptual skills, supporting academics in creating value for the community, and motivating the culture of helping others grow and succeed (Ghasemy et al. 2022b).

With respect to the residual covariances, and given the imposed equality constraints on these parameters, we observed relatively weak, but statistically significant correlations, between the residuals. This finding points towards situational factors that are not present in our model but could have influenced servant leadership behaviors and affective commitment during our assessment.

Moreover, our model showed that age and academic rank were considerably related to one another ( $r=0.557$ ), which means that the older the lecturer, the higher the rank. This seems to be intuitive and expected. In addition, we found that age was a significant predictor of servant leadership and academic rank was a significant predictor of affective commitment. To compare the roles of the time-invariant covariates in our model, and considering the standardized estimates displayed in Fig. 2, we observed that age group’s effect on servant leadership (0.275) was larger than academic rank’s effect on affective commitment (0.200). Given the positive association between academic rank and affective commitment

as well as between age and servant leadership, policies should focus on increasing junior and younger academics' affective commitment and servant leadership behaviors. Since young employees might lack experience, we recommend mentorship programs, which successfully improve young tenured professors' views on their working environment, have an impact on their research and funding activities (van der Weijden et al. 2015), and support them in developing servant leadership behaviors (Beck 2014).

## 6 Conclusion and future research

During unpredictable times, such as the Covid-19 pandemic, universities should witness and promote relevant and effective leadership behaviors. Practicing leadership behaviors is not confined to leaders and, in fact, anyone (e.g., academics) can exhibit such behaviors. Consequently, our study aimed at investigating the influence of academics' servant leadership behavior on their job performance directly, and indirectly via affective commitment. We designed a longitudinal study at three time points—the beginning of the lockdown (April 2020), the end of the lockdown (June 2020), and two months after the lockdown (August 2020). Using data from the final sample of 210 academics and through LGC modeling, we found that (1) servant leadership and affective commitment were stable over time, (2) servant leadership was a driver of affective commitment and job performance in academic settings, (3) affective commitment partially mediated the relationship between servant leadership and job performance, (4) age's impact on servant leadership was higher than academic rank's effect on affective commitment, and (5) servant leadership's influence on job performance was higher than the one of affective commitment. We, thereby, contribute to research by providing evidence on servant leadership, affective commitment, and job performance in higher education, while considering age and academic rank as covariates as well as the Covid-19 pandemic's background.

Our study is not without limitations. First, in this study, we only focused on job/in-role performance as our target construct. Therefore, we recommend researchers to consider other types of performance in academic settings as distal outcomes in their LGC models. Examples for other performance outcomes are knowledge performance and research performance (Ponnuswamy and Manohar 2016). Second, the correlations between the residual variances of servant leadership and affective commitment measured at Time 1, Time 2, and Time 3 indicate the presence of other factors that can positively influence servant leadership and affective commitment at the beginning, at the end, and two months after the end of a lockdown. Therefore, future research should focus on identifying those variables that are not included in our model. Third, we recommend repeating this study in later stages of the Covid-19 pandemic, when the Covid-19 pandemic is considered as being over, or in possible future crises. Therein, it would be a good opportunity to collect data at more than three meaningful assessment points, so that different shapes of change curves can be more easily studied. A related issue is the one of attrition in collecting longitudinal data (Grimm et al. 2017). In general, treating uncollected data at each assessment point as missing completely at random (MCAR) is ordinarily a safe assumption, since such data are missing by design in a single group analysis (Preacher et al. 2008). While the results of single group LGC modeling are highly similar to the results of the cohort sequential LGC design (Duncan et al. 2006; Preacher et al. 2008), we would like to recommend researchers to consider the accelerated or cohort sequential LGC design to address the issue of attrition in longitudinal studies. Last, with respect to analytical and methodological recommendations, we suggest



testing other types of longitudinal theoretical models using the state of the art PLSe2 estimator (Bentler and Huang 2014; Ghasemy 2022; Ghasemy et al. 2021b) or specifying and estimating LGC models in which the distal outcomes are conceptualized as latent factors (Bollen and Curran 2006).

## Appendix A1

*Sample correlation matrix (N = 210)*

Variables	SL1 (V3)	SL2 (V4)	SL3 (V5)	COM1 (V6)	COM2 (V7)	COM3 (V8)	JP3 (V9)
SL1 (V3)	1.000						
SL2 (V4)	0.690	1.000					
SL3 (V5)	0.689	0.750	1.000				
COM1 (V6)	0.321	0.287	0.228	1.000			
COM2 (V7)	0.279	0.299	0.230	0.839	1.000		
COM3 (V8)	0.248	0.262	0.270	0.838	0.863	1.000	
JP3 (V9)	0.366	0.335	0.457	0.248	0.308	0.320	1.000

## Appendix A2

*EQS code to run the final model*

/TITLE

EQS file for estimating the final LGC model.

/SPECIFICATIONS

VARIABLES = 9; CASES = 210;

METHOD = ML; ANALYSIS = MOMENT; MATRIX = COVARIANCE;

/LABELS

V1 = AGE\_GR; V2 = RANK\_T1; V3 = SL1; V4 = SL2;

V5 = SL3; V6 = COM1; V7 = COM2; V8 = COM3; V9 = JP3;

/EQUATIONS

V1 = \*V999 + E1;

V2 = \*V999 + E2;

V3 = 1F1 + E3;

V4 = 1F1 + E4;

V5 = 1F1 + E5;

V6 = 1F3 + E6;

V7 = 1F3 + E7;

V8 = 1F3 + E8;

V9 = \*V999 + \*F1 + \*F3 + E9;

F1 = \*V999 + \*V1 + D1;

F3 = \*V999 + \*F1 + \*V2 + D3;

/VARIANCES

V999 = 1;

E1 = \*;

```

E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = *;
E8 = *;
E9 = *;
D1 = *;
D3 = *;
/COVARIANCES
E2,E1 = *;
E3,E6 = *;
E4,E7 = *;
E5,E8 = *;
/CONSTRAINTS
(E3,E6) = (E4,E7);
(E4,E7) = (E5,E8);
/MATRIX

```

---

3.1532									
0.9955	1.0149								
1.5564	0.8448	10.6508							
1.5388	0.6660	6.8477	9.2573						
0.8979	0.4513	6.5617	6.6585	8.5229					
1.8919	1.1904	4.6866	3.9038	2.9746	19.9813				
2.1325	0.9874	3.8988	3.8919	2.8745	16.0268	18.2797			
1.7889	1.0372	3.5137	3.4646	3.4252	16.2579	16.0156	18.8275		
0.8023	0.4755	3.8741	3.3026	4.3203	3.5842	4.2701	4.4917	10.4958	

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```

/MEANS

```

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2.6286	1.2571	28.4524	28.3667	28.2905	24.3000	24.0857	23.9857	29.9190
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/PRINT

```

Effect = YES; ! since the sample covariance matrix has been used as the input matrix, indirect effects are estimated based on Sobel test.

```

FIT = ALL;

```

```

TABLE = COMPACT;

```

```

/END

```

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**Data availability** The sample correlation matrix (N = 210) and the EQS code for estimating the final model appear in Appendix A1 and A2, respectively.

## Declarations

**Conflict of interest** There is no financial or non-financial conflict of interest among the authors.

**Ethical approval** The performed procedures were in accordance with the ethical standards of the institutional research committee (USM/JEPeM/19090523) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Participation in this study was voluntary, the respondents had the option to leave the study at any time, information was anonymized, and the article does not include images that might identify the participants.

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