Research agendas and organizational commitment among academics in mainland China

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Abstract
This research pioneered the investigation of the statistically predictive power of academics’ research agendas for their organizational commitment—beyond age, gender, academic rank, and academic discipline. Three hundred and thirty-two academics from nine research-oriented comprehensive universities in Zhejiang province and Shanghai, mainland China, responded to the Multi-Dimensional Research Agendas Inventory-12 Items (MDRAI-12) and the Organizational Commitment Inventory. Three main findings were obtained. First, the MDRAI-12 was confirmed to be a valid and reliable instrument for assessing the research agendas of academics in mainland China. Second, both academics’ research agendas and their organizational commitment varied as a function of demographics. Third and most importantly, when age, gender, academic rank, and academic discipline were put under control, three of the four trailblazing research agendas (scientific ambition, collaboration, and discovery) predicted the three adaptive organizational commitments (affective, normative, and ideal), whereas the two cohesive research agendas (convergence and conservative) chiefly contributed to the two maladaptive organizational commitments (economic and choice). These findings have shed new light on the literature concerning research agendas and that on organizational commitment. At the same time, the findings have practical implications for university academics and senior managers in their respective efforts to promote innovative research and adaptive organizational commitment among academics.

Keywords Academics · Research agendas · Organizational commitment · Demographics

Introduction
The desire for attaining and retaining the status of a world-class university makes it imperative that any higher educational institution possess an academic force that is highly committed to the organization in that academics stay with their universities not only out of their desire for realizing their own career aspirations or because of their

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strong emotional attachment to their universities but also due to their genuine care for their universities’ positive growth. As Eisinga et al. (2010) observed, organizational commitment is a critical factor in the success of higher educational institutions. In 2022, subsequent to its “Project 211,” “Project 985,” and “Double first-class” initiatives—all aimed at developing world-class universities—the Chinese government issued an expanded plan for promoting more of its universities and disciplines, by the hundreds for each category, to world-class level by the year 2030 (Ministry of Education, Ministry of Finance, National Development and Reform Commission, 2022). Such an ambition would not be realized without academics’ adaptive organizational commitment nor without their aspirations and actions for pursuing innovative research.

The present study investigates the statistical predictive power of one aspect of research, that is, research agendas, for organizational commitment among academics in mainland China. Of the many research-relevant factors, the construct of research agendas (i.e., a combination of academics’ plans and structures for strategic problem-solving and actions for pursuing their research goals; Ertmer & Glazewski, 2014) has been selected because research agendas serve as the blueprint for academics’ research.

Defined as the psychological attachment that individuals feel towards the organization for which they work (O’Reilly & Chatman, 1986), organizational commitment has been extensively researched as an outcome, with its antecedents being such variables as demographics (e.g., age, gender, academic rank, and academic discipline; Farooq et al., 2011), job features (Lawrence et al., 2012), and personal attributes (Zhang, 2015). However, barely any study (Horta & Santos, 2020; see literature review) has investigated the contributions of academics’ intellectual processes to their organizational commitment.

The principal objective of this study was to understand the (statistical) impact of an intellectual process, that is, academics’ research agendas, on organizational commitment—beyond demographics. Research agenda is an intellectual process because both the planning and implementation of one’s research agenda call for a course of action involving intellectual activities (see under “Theoretical Background and Hypothesis Development”). Furthermore, given the scant research and the ambiguous findings concerning the association of demographics with both research agendas (Horta & Santos, 2020) and organizational commitment (Joiner & Bakalis, 2006), the study’s preliminary objective was to explore the contributions of demographics to research agendas and organizational commitment, respectively. The present findings will not only enrich the literature on research agendas and that on organizational commitment, but also have practical implications for academics and university senior managers in their respective efforts to foster academics’ adaptive organizational commitment and innovative research.

**Theoretical background and hypothesis development**

The present study was founded on two theoretical constructs that are connected by Meyer et al.’s (2004) integrative model of employee commitment and motivation: research agendas and organizational commitment. While Meyer et al.’s (2004) model illustrated the intimate relationship between motivation and commitment, empirical research (Gagné et al., 2008) pointed to the predictive power of work motivation for organizational commitment.
Research agendas

The notion of research agenda had long been discussed by scholars (Horlings & Gurney, 2013; Merton, 1957). However, research agendas with respect to individual academics were not examined until less than a decade ago (Ertmer & Glazewski, 2014). Research agendas are academics’ preferences regarding both general (strategic in nature, e.g., career) and specific (operational in nature, e.g., methods) objectives and practices when setting and pursuing research goals (Ertmer & Glazewski, 2014). Considering that research agendas serve as the blueprint for academics’ research goals (Ertmer & Glazewski, 2014), research agendas can be understood as work motivation—what Dweck (1989) called motivational orientations in the realm of research. At the heart of motivation process is goal setting (Meyer et al., 2004). Academics’ goal setting in the domain of research primarily concerns setting their research agendas.

Horta and Santos (2016) identified eight prevailing dimensions of research agendas: (1) scientific ambition; (2) discovery; (3) conservative; (4) divergence; (5) convergence; (6) collaboration; (7) mentor influence; and (8) tolerance for low funding. The present study examined the first six dimensions for empirical and conceptual reasons. Empirically, it is the first six dimensions of research agendas that have been consistently proven to be value laden (i.e., some dimensions were routinely associated with adaptive attributes such as open-mindedness and job satisfaction, while others were usually related to maladaptive attributes; see under the section “Research agendas and personal attributes”). Conceptually, because they are value laden, the six dimensions would be more readily examined against the construct of organizational commitment containing five dimensions that are also value laden (see under the section “Organizational commitment” and Hypotheses 2a and 2b).

According to Horta and Santos (2016), Scientific ambition characterizes an academic’s tendency to pursue research that could lead to one’s recognition as an authority in one’s field. Discovery signifies one’s inclination for pursuing cutting-edge research, whereas being conservative denotes one’s tendency for researching in a conventional field. Divergence is one’s propensity for pursuing research via a multidisciplinary approach, whereas convergence is an academic’s predilection for being engaged in research in a single discipline. Finally, collaboration refers to one’s preference for getting involved in joint research. These dimensions of research agendas may share common variance so that each academic has a profile of research agendas.

Together with mentor influence and tolerance for low funding, these six research agendas were measured with the Multi-Dimensional Research Agendas Inventory (MDRAI; Horta & Santos, 2016). Empirical data further demonstrated that academics are likely to primarily pursue one of two types of research agendas: trailblazing or cohesive (Santos & Horta, 2018). Trailblazing research agendas (including scientific ambition, divergence, discovery, and collaboration) call for academics’ genuine interest in pursuing pioneering research projects that typically require complex and highly intellectually challenging tasks that could eventually lead to groundbreaking scientific outcomes; that is to say, setting trailblazing research agendas resembles what Dweck and Leggett (1988) called setting a mastery goal. By contrast, cohesive research agendas (including convergence and conservative) are usually pursued by academics who tend to be conventional in their research. Academics who pursue such research agendas prefer to undertake tasks with low risks or no risk, tasks that “guarantee” immediate outcomes that, in turn, lead to some kind of short-term reward (Santos & Horta, 2018). With these characteristics, setting cohesive research agendas resembles what Dweck and Leggett (1988) called setting a performance goal.
Though still scarce, the existing research on academics in several parts of the world (e.g., Australia, Belgium, Hong Kong, Portugal, South Korea, the UK, and the USA) has yielded two bodies of informative literature: (1) research agendas with demographic and organizational factors and (2) research agendas and personal attributes.

**Research agendas with demographic and organizational factors**

Existing studies suggested that research agendas vary by demographic and organizational factors. For example, older academics tend to be engaged in more cohesive research agendas than do younger academics (Horta & Santos, 2020; Santos et al., 2020; Zhang et al., 2020). With the exception of one study (Santos & Horta, 2018) that did not identify gender difference, the existing studies (e.g., Horta & Santos, 2020; Santos et al., 2021; Zhang et al., 2020) found that male and senior academics are likely to pursue innovative research agendas and that female and junior academics tend to pursue cohesive agendas. Academics in STEM fields pursue collaborative research more often than do their non-STEM counterparts. As a final example, academics who perceive higher levels of autonomy and more collegiality at work are more likely to pursue trailblazing research agendas (Horta & Santos, 2020).

Despite the existing findings, there are two reasons for undertaking the present study. First, the limited studies on the association of academics’ research agendas with their demographics yielded inconsistent findings, particularly those involving gender (e.g., Horta & Santos, 2020; Santos & Horta, 2018; Zhang et al., 2020). Ascertaining demographic differences in research agendas would be beneficial not only to the literature but also to academics and university senior managers in identifying strategies to promote innovative research among academics of different demographic groups. Based on the existing literature, the present study posited:

**Hypothesis 1a**: Academics’ research agendas would differ as a function of age, gender, academic rank, and academic discipline.

**Research agendas and personal attributes**

More recent studies (Horta & Santos, 2020; Santos et al., 2020; Zhang & Horta, 2022; Zhang et al., 2020) have demonstrated that six of the eight research agendas (all except mentor influence and tolerance for low funding) are value laden: trailblazing research agendas are more adaptive, and cohesive research agendas are more maladaptive. Particularly, trailblazing research agendas were significantly associated with adaptive attributes, including desirable personality traits (e.g., conscientiousness and open mindedness), creative teaching and thinking styles, and job satisfaction, whereas cohesive research agendas were significantly related to more maladaptive attributes, including undesirable personality traits (e.g., neuroticism), norm-favoring teaching and thinking styles, and job dissatisfaction (Horta & Santos, 2020; Santos et al., 2020; Zhang & Horta, 2022; Zhang et al., 2020). Conceptualized as motivational goals concerning academics’ research, research agendas have not been examined against the construct of organizational commitment—an important theoretical construct in Meyer et al.’s (2004) integrative model of employee commitment and motivation. Because there is empirical evidence demonstrating that work motivation had significant impact on organizational commitment (Gagné et al., 2008), the present study
made the first attempt to understand the statistical predictive relationship of research agendas to organizational commitment.

**Organizational commitment**

Comprising affective, normative, and continuance commitment, Meyer and Allen’s (1991) three-component model of organizational commitment has been widely researched with university academics (e.g., Eisinga et al., 2010) and with employees in various industries (e.g., Gagné et al., 2008). In studying organizational commitment in industries in mainland China, Ling et al. (2002) identified five components to organizational commitment: normative, affective, economic, choice, and ideal commitment. Like in Meyer and Allen’s (1991) model, normative commitment (NC) and affective commitment (AC) concern employees’ obligation to stay with their organizations and emotional attachment to their organizations, respectively. Two components (economic commitment and choice commitment) in Ling et al.’s (2002) model were derived from continuance commitment in Meyer and Allen’s (1991) model. Economic commitment (EC) pertains to fear for financial losses associated with terminating one’s organizational membership, while choice commitment (CC) concerns perceived lack of alternative jobs. Finally, ideal commitment (IC), an additional component to Meyer and Allen’s (1991) model, involves employees’ desire to fulfill their career aspirations.

The five-component model has been validated in universities in mainland China (e.g., Jing, 2010; Zhang, 2015, 2019; Zhang et al., 2017). Essentially, two bodies of literature have been built: (1) organizational commitment and demographics and (2) organizational commitment with personal attributes and work outcomes.

**Organizational commitment and demographics**

Several studies have examined Chinese academics’ organizational commitment with one or more of four demographics: age, academic discipline, gender, and academic rank. Differences based on the first two demographics are largely consistent, whereas those based on the latter two remain unclear.

Generally, older academics report significantly more adaptive organizational commitment. Specifically, older academics reported higher levels of IC (Zhang, 2019), NC (Zhang et al., 2017) and AC (Zhang & Jing, 2016) than did younger academics. Two studies revealed that compared with academics in non-STEM disciplines, those in STEM disciplines expressed stronger AC and IC (Zhang, 2015; Zhang et al., 2017). However, among the existing studies, only one (Zhang & Jing, 2016) identified gender difference: Male academics scored significantly higher on IC than did female academics. Similarly, only Jing’s (2010) study reported academic rank difference: Senior academics indicated significantly stronger AC and IC than did junior ones. The present study continues to pursue this line of research and it posited:

**Hypothesis 1b:** Academics’ organizational commitment would differ as a function of age, gender, academic rank, and academic discipline.
Organizational commitment with personal attributes and work outcomes

Like research agendas, organizational commitment has been shown to be value laden: NC, AC, and IC are adaptive, whereas EC and CC are maladaptive. For example, academics with stronger NC reported higher levels of research productivity (Jing, 2010). Academics’ AC, NC, and IC were significantly positively predicted by the desirable conscientiousness personality trait, whereas their CC was positively predicted by the undesirable neuroticism personality trait (Zhang, 2015). Academics’ AC, NC, and IC were closely associated with positive teaching emotions, whereas EC and CC were related to negative teaching emotions (Zhang, 2019). Finally, Zhang and Jing (2016) found a significant association of organizational commitment with an intellectual process, teaching styles: Academics with stronger AC tended to report the use of creative teaching styles, while those with stronger EC and CC tended to report the use of norm-conforming teaching styles.

The question is as follows: can academics’ organizational commitment be statistically predicted by an intellectual process in research such as research agendas? The present study mainly addresses this question.

Research agendas and organizational commitment

Hitherto, only one study (Horta & Santos, 2020) examined the association of academics’ research agendas with their organizational commitment. Precisely, when investigating the relationship between organizational factors and research agendas, Horta and Santos (2020) discovered that organizational commitment was positively related to cohesive (conforming) research agendas, but negatively related to trailblazing research agendas. Horta and Santos’s (2020) findings possess heuristic value for understanding the relationship between academics’ research agendas and their organizational commitment. However, one major limitation inherent in their study necessitates further investigation. Namely, probably because examining the relationship between research agendas and organizational commitment was not a focus of their research, Horta and Santos (2020) did not measure organizational commitment using a theory-based instrument. Rather, they evaluated organizational commitment with two single items: “belonging” and “willingness to stay.” However, organizational commitment is multidimensional (Ling et al., 2002; Meyer & Allen, 1991), and different dimensions of organizational commitment have different relations with other types of antecedents and outcomes (Meyer et al., 2004). Consequently, the present study investigated (statistically) the contributions of academics’ research agendas to their organizational commitment with theory-based measures. Based on the existing literature (Gagné et al., 2008), the nature of research agendas and that of commitment, as well as Meyer et al.’s (2004) integrative model of employee commitment and motivation, the study further posited:

Hypothesis 2a: After the demographics are controlled for, trailblazing research agendas would statistically positively predict adaptive organizational commitment (i.e., affective commitment, normative commitment, and ideal commitment), but negatively predict maladaptive organizational commitment (i.e., economic commitment and choice commitment).
Hypothesis 2b: After the demographics are controlled for, cohesive research agendas would positively predict maladaptive organizational commitment, but negatively predict adaptive organizational commitment.

Method

Participants and procedure

This study was part of a larger research project on the academic profession in mainland China. Ethics approval was obtained from the Human Research Ethics Committee of the University with which the authors are affiliated. Participants comprised 332 academics (152 males and 180 females) from nine research-oriented comprehensive universities in Zhejiang province and Shanghai—two eastern coastal regions in mainland China, both having been at the forefront of not only economic reforms but also higher education reforms in the past three decades. The participants were recruited through a snowball sampling procedure—beginning with nine academics, each representing one of the nine participating institutions. Among the 332 academics (mean = 37.90 years, SD = 7.52; median = 37 years, ranging from 23 to 65 years), 156 were in STEM (science, technology, engineering, and mathematics) fields, and 176 were in non-STEM fields; 131 were full professors and associate professors (i.e., senior academics), and 201 were assistant professors and below (i.e., junior academics). The data were collected in January 2020.

Instruments

Multi-Dimensional Research Agendas Inventory-12 Items (MDRAI-12)

The MDRAI (Horta and Santos, 2016) contains 35 items measuring eight research agendas. Drawing from the MDRAI, Zhang et al. (2020) developed a 12-item version of the MDRAI (referred to as the MDRAI-12 hereafter) assessing six research agendas—four trailblazing (i.e., scientific ambition, discovery, divergence, and collaboration) and two cohesive (i.e., conservative and convergence) ones. The participants indicated the degree to which each statement represented their research situation on a 7-point Likert scale, with “1” indicating “not at all well” and “7” indicating “extremely well” (see “Discussion” for sample items and Zhang & Horta, 2022 for full version of the MDRAI-12).

The MDRAI-12 showed good psychometric properties when used with academics in Hong Kong and mainland China (Zhang et al., 2020; Zhang et al., under review). In the present research, results from a confirmatory factor analysis (CFA) supported the validity of the MDRAI-12. The model fit indices for the MDRAI-12 were $\chi^2 (59.834/39) = 1.53$, $p < 0.05$, (SRMR = 0.03, RMSEA = 0.04, TLI = 0.98, CFI = 0.99). The factor loadings for the 12 items ranged from 0.62 to 0.95. Cronbach’s (1951) alphas for the six MDRAI-12 scales were 0.89 (scientific ambition), 0.89 (discovery), 0.88 (divergence), 0.79 (collaboration), 0.88 (conservative), and 0.61 (convergence).

Organizational Commitment Inventory

Ling et al. (2002) constructed the 20-item Organizational Commitment Inventory (OCI) to evaluate the five components (i.e., AC, NC, IC, EC, and CC) of organizational commitment.
among employees in industries in mainland China. Subsequent studies among academics (Zhang, 2015, 2019; Zhang & Jing, 2016) consistently found that satisfactory psychometric properties of the OCI were more easily obtained with three items removed. Thus, the 17-item inventory was adopted in this study. For each statement, the participants rated themselves on a 5-point Likert scale, with “1” meaning “not at all fit me” and “5” suggesting “completely fit me” (see also “Discussion” for sample items; Jing, 2010 and Zhang, 2019 for full version of the OCI).

The present CFA results supported the five-component model of organizational commitment. The model fit indices for the OCI were $\chi^2 (361.276/109) = 3.31$, $p < 0.001$, (SRMR = 0.08, RMSEA = 0.08, TLI = 0.92, CFI = 0.94). The factor loadings of the 17 items ranged from 0.48 to 0.92. Cronbach’s alphas were 0.90 (AC), 0.82 (NC), 0.94 (IC), 0.80 (EC), and 0.79 (CC).

According to the criteria set by Kline (2005) and DeVellis (1991), the validity and reliability data were acceptable for both the MDRAI-12 and the OCI.

Data analysis

Descriptive statistics were examined. Following that, zero-order correlations, MANOVA, and $t$ test were performed to explore the association of the demographics with the scales in the two inventories. Each of the four demographics (i.e., age, gender, academic discipline, and academic rank) was significantly related to at least one of the scales in either the MDRAI-12 or the OCI (see “Results”).

To remove the potential confounding effects of the demographics on the relationships between research agendas and organizational commitment, hierarchical multiple regressions were performed, with the six research agendas specified as the independent variable, organizational commitment as the dependent variable, and the demographics as control variables. All of the statistical analyses were executed in SPSS 24.0.

Results

Descriptive statistics

The value of means, standard deviations, skewness, and kurtosis are displayed in Table 1. According to Kline (2005), data formed a normal distribution. The correlation coefficients between each research agenda and each component of organizational commitment are also shown in Table 1. Results indicated that the four trailblazing research agendas were positively related to adaptive commitments (i.e., AC, NC, and IC), while the two cohesive research agendas (i.e., convergence and conservative) were positively related to maladaptive commitments (i.e., CC and EC). The correlation coefficient magnitudes are predominantly medium (Cohen, 1992). Additionally, the conservative agenda was also positively correlated with AC, NC, and IC, though the correlation coefficient magnitudes are small (Cohen, 1992).

Demographic differences in research agendas and organizational commitment

As anticipated, academics’ research agendas and organizational commitment varied by the demographics tested. Regarding research agendas, older and female academics scored
Table 1  Descriptive statistics and zero-order correlations among the scales in the two inventories

| Scale         | M   | SD  | skewness | kurtosis | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | 10  | 11  |
|---------------|-----|-----|----------|----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 1 Convergence | 4.22| 1.32| -.04     | -.43     |     |     |     |     |     |     |     |     |     |     |     |
| 2 Divergence  | 4.77| 1.32| -.14     | -.56     | -.06|     |     |     |     |     |     |     |     |     |     |
| 3 Scientific  | 5.29| 1.40| -.54     | -.54     | .19**| .22***|     |     |     |     |     |     |     |     |     |
| 4 Discovery   | 4.99| 1.35| -.33     | -.52     | .13*| .38***| .52***|     |     |     |     |     |     |     |     |
| 5 Collaboration | 5.04| 1.27| -.47     | -.20     | .10 | .28***| .46***| .49***|     |     |     |     |     |     |     |
| 6 Conservative| 3.74| 1.33| -.61     | .33***| .03 | -.01| -.07| .05 |     |     |     |     |     |     |     |
| 7 AC          | 3.34| .98 | .00      | -.82     | .10 | .13*| .34***| .26***| .28***| .19**|     |     |     |     |
| 8 NC          | 3.37| .93 | -.21     | -.37     | .11 | .15**| .36***| .30***| .31***| .18**| .80***|     |     |     |
| 9 IC          | 2.99| 1.02| .12      | -.65     | .19***| .04 | .36***| .21***| .29***| .20***| .75***| .67***|     |     |
| 10 CC         | 2.24| .93 | .66      | -.03     | .26***| -.01| -.03| .01 | -.09| .29***| .13*| .10 | .23***|     |     |
| 11 EC         | 2.76| .92 | .05      | -.50     | .20***| -.04| .03 | -.05| -.01| .27***| .26***| .19**| .38***| .55***|     |

Scientific, scientific ambition; AC, affective commitment; NC, normative commitment; IC, ideal commitment, CC, choice commitment; EC, economic commitment. *p < .05, **p < .01, ***p < .001
significantly lower on scientific ambition than did their younger and male counterparts, respectively. Compared with senior academics, junior academics tended to pursue a more convergent research agenda. Academics in STEM fields scored higher on trailblazing (particularly, scientifically ambitious, divergent, and collaborative), but simultaneously higher on conservative, research agendas than did non-STEM academics (see Table 2 for statistically significant results).

Concerning organizational commitment, older academics scored significantly lower on ideal commitment than did younger academics. Junior academics tended to indicate stronger ideal commitment than did senior academics. Compared with academics in

| Table 2  | Demographic differences in research agendas and organizational commitment |
|----------|--------------------------------------------------------------------------------|
| **Demographic** | **Mean** | **N** | **t value** | **df** | **Sig. (2-tailed)** |
| **Research agendas** | | | | | |
| Gender | (Scientific ambition) 5.51Male; 5.10Female | 151Male; 179Female | 2.68 | 328 | 008 |
| Acad. Rank | (Convergence) 4.04Senior; 4.34Junior | 131Senior; 201Junior | -2.04 | 330 | .027 |
| Acad. Discip | (Scientific ambition) 5.45STEM; 5.15Non-STEM | 156STEM; 176Non-STEM | 1.97 | 330 | .048 |
| Acad. Discip | (Divergence) 4.96STEM; 4.61Non-STEM | 156STEM; 176Non-STEM | 2.38 | 330 | .018 |
| Acad. Discip | (Collaboration) 5.23STEM; 4.89Non-STEM | 156STEM; 176Non-STEM | 2.39 | 330 | .018 |
| Acad. Discip | (Conservative) 3.93STEM; 3.57Non-STEM | 156STEM; 176Non-STEM | 2.53 | 330 | .012 |
| **Organizational commitment** | | | | | |
| Acad. Rank | (IC) 2.82Senior; 3.10Junior | 131Senior; 201Junior | -2.45 | 330 | .015 |
| Acad. Discip | (AC) 3.57STEM; 3.13Non-STEM | 156STEM; 176Non-STEM | 4.21 | 330 | .000 |
| Acad. Discip | (NC) 3.57STEM; 3.18Non-STEM | 156STEM; 176Non-STEM | 3.88 | 330 | .000 |
| Acad. Discip | (IC) 3.17STEM; 2.83Non-STEM | 156STEM; 176Non-STEM | 3.04 | 330 | .003 |

Pearson correlation coefficient between scientific ambition and age = − .18**
Pearson correlation coefficient between IC and age = − .18**

Acad. Discip., academic discipline; Acad. Rank, academic rank; IC, ideal commitment; AC, affective commitment; NC, normative commitment;

**p < .01
non-STEM fields, academics in STEM fields scored significantly higher on all three adaptive organizational commitment scales (AC, NC, and IC). No gender difference was found in organizational commitment (see also Table 2).

**Contributions of research agendas to organizational commitment beyond demographics**

Regressions yielded significant results for all five organizational commitment scales. Five of the six research agendas were involved in the statistically significant predictions, with divergence being the exception. The unique contributions of research agendas beyond demographics were 14% for AC (positively by scientific ambition and conservative research agendas), 17% for NC (positively by scientific ambition, discovery, and conservative), 16% for IC (positively by scientific ambition, collaboration, and conservative), 13% for CC (negatively by collaboration and positively by conservative), and 9% for EC (positively by conservative). Cohen’s $f^2$ ranged from 0.10 (for EC) to 0.20 (for NC). With the exception of the value for EC, the remaining effect sizes are medium in magnitude (Ellis, 2010) (see Table 3).

**Discussion**

This study’s preliminary objective was to determine if academics’ research agendas and organizational commitment would vary as a function of age, gender, academic rank, and academic discipline. More importantly, it sought to understand the impact of research agendas on organizational commitment in a statistical sense when the aforementioned demographics were considered. The results concerning the two research objectives are discussed as follows.

| Table 3 Contributions of research agendas to organizational commitment beyond demographics |
|---------------------------------|--------|--------|--------|--------|--------|
| OC    | AC    | NC    | IC    | CC    | EC    |
| $R^2_{\text{demo}}$         | .06    | .05    | .06    | .01    | .02    |
| $R^2_{\text{RA}}$            | .14    | .17    | .16    | .13    | .09    |
| $R^2_{\text{Total}}$         | .20    | .22    | .22    | .14    | .11    |
| Cohen’s $f^2$                 | .16    | .20    | .19    | .15    | .10    |
| $F$                            | 8.20***| 9.29***| 9.16***| 5.19***| 3.85***|
| $df$                           | 10,319 | 10,319 | 10,319 | 10,319 | 10,319 |
| $\beta_{\text{convergence}}$ | .20**  | .12*   |        |        |        |
| $\beta_{\text{divergence}}$  |        |        |        |        |        |
| $\beta_{\text{scientific ambition}}$ | .24*** | .25*** | .26*** |        |        |
| $\beta_{\text{discovery}}$   | .13*   |        |        |        |        |
| $\beta_{\text{collaboration}}$ | .15†    |        |        | .17**  |        |
| $\beta_{\text{conservative}}$ | .19**  | .17**  | .17**  | .24*** | .24*** |

$R^2_{\text{demo}}$, the contribution of gender, age, academic rank, and academic discipline to organizational commitment; $R^2_{\text{RA}}$, the unique contribution of research agendas to organizational commitment; $R^2_{\text{Total}}$, the contribution of gender, age, academic rank, academic discipline, and research agendas to organizational commitment; *$p < .05$, **$p < .01$, ***$p < .001$
Demographic differences in key constructs

Research agendas and demographics

Significant differences were found in research agendas by all four demographics. Concerning age difference, one of the possible reasons why older academics tended to score lower on scientific ambition is that some of the older academics were already engaged in scientifically ambitious research and had been recognized as world authorities in their academic fields. Therefore, when responding to, for example, “I aim to one day be one of the most respected experts in my field,” they would not rate themselves high. Another possible reason is that some other older academics, despite having not been recognized as world-famed scholars, were actually not aspired to become so because they either were satisfied with their own research or had already given up striving for such reputation at their older ages. The present finding resonates with the existing literature, suggesting that older academics tend to be engaged in more cohesive research agendas (Horta & Santos, 2020; Santos et al., 2020; Zhang et al., 2020).

The finding that female academics were less likely to pursue a scientific ambition research agenda than were male academics dovetailed those in previous findings (Horta & Santos, 2020; Santos et al., 2020, 2021). It also echoed Santos et al.’s (2021) finding that it took female academics much longer to establish trailblazing research agendas than it did for male academics.

The finding that junior academics tended to pursue a more convergent research agenda dovetails the general finding that senior academics are more likely to pursue a divergent research agenda (Horta & Santos, 2020; Santos et al., 2020, 2021; Zhang et al., 2020). Moreover, it makes good sense: In principle, by virtue of their shorter lengths of service, junior academics normally have shorter periods of knowledge accumulation and tend to have encountered fewer cognitive dissonances than do their senior counterparts. Both knowledge accumulation and cognitive-dissonance resolution are necessary conditions for divergent thinking (Baxter Magolda & King, 2012); and lacking in such experiences is likely to be associated with convergent thinking—a key contributor to a convergent research agenda.

The finding that academics in STEM fields were engaged in significantly more innovative (especially, more scientifically ambitious, divergent, and collaborative) research agendas than were their non-STEM peers is aligned with previous findings (Kim et al., 2014; Santos et al., 2021; Zhang & Horta, 2022). The collaborative nature of work in STEM fields is a good starting point for explaining it. For at least three reasons, STEM academics engage in more collaborations than do non-STEM academics: (1) they usually share access to equipment; (2) they frequently work in teams in laboratories; and (3) they are more driven by collective decision-makings concerning the most urgent research (Becher, 1989). Collaboration plays an essential role in scientific creativity, and it contributes to divergent thinking in idea generation (Sawyer, 2007), which explains why academics in STEM fields were also more likely to pursue a divergent research agenda than were their non-STEM counterparts. Additionally, there could be many reasons why academics in STEM fields tend to pursue scientifically ambitious research agendas. One of the primary reasons could be rooted in the collaborative nature of academic work in STEM fields. Namely, more frequent collaborative work would necessarily provide STEM academics with more opportunities to be exposed to different ideas and thus more opportunities to be engaged in problem-solving, both of which are conducive to the creation of big ideas (Sawyer, 2007). Creative ideas are the cornerstone for a scientifically ambitious research agenda (Zhang & Horta, 2022).
Finally, it might seem puzzling that academics in STEM fields simultaneously exhibited a stronger preference for both trailblazing research agendas and the conservative research agenda (one of the cohesive research agendas) than did non-STEM academics. It is possible for STEM academics to pursue novel research in conventional areas. For example, medical academics may pursue cutting-edge research on inventing vaccines for the COVID-19 in epidemiology—one of the most conventional areas in the medical field. Meanwhile, non-STEM academics scored lower on the conservative research agenda might be because, among other possible reasons, it is necessary for them to keep up with the times regarding their research topics. For example, non-STEM academics may focus on globalization for a period of time before moving on to internationalization and then on to world-class university ranking, and so forth.

Organizational commitment and demographics

Generally, younger academics, junior academics, and academics in STEM fields reported higher levels of adaptive organizational commitment than did their respective counterparts. Gender difference was not found.

The finding that younger and junior academics tended to stay with their universities because of their stronger desire to fulfill their career aspirations (i.e., IC) is not surprising. Younger and junior academics are normally early career makers and some are in their “honeymoon” period in their academic career. Such freshness would make it easier for younger and junior academics to find their universities intellectually stimulating, perceive more opportunities within universities, and feel that their universities were the best place for them to work in. Furthermore, due to their relative lack of experience, even small work successes would significantly boost their sense of competence. All of these feelings and perceptions, based on the statements used to evaluate IC in the Organizational Commitment Inventory, would increase their scoring on IC. In contrast, having been in the academia much longer, older and senior academics could have been habituated to their institutional environment. Thus, they would not feel the same way their younger and junior counterparts did.

Although the above explanations concerning academics’ IC difference based on age and academic rank sound reasonable, the present findings involving age did not support that in Zhang’s (2019) study of academics in mainland China and that in Rungruang and Donohue’s (2007) study of Thai academics (using Meyer & Allen’s, 1991 three-component model). Similarly, the present finding involving academic rank contradicted Jing’s (2010) finding. It is possible that these contradictory findings have to do with differences in such aspects as specific samples recruited, instruments used, and cultural and regional contexts in which the studies were conducted. Regardless, with these inconsistent findings, further investigations are needed.

Finally, the finding that academics in STEM fields scored significantly higher on all three adaptive organizational commitments (i.e., AC, NC, and IC) than did those in non-STEM fields dovetailed that obtained by Zhang and her colleagues (Zhang, 2015; Zhang et al., 2017). There could be different interpretations to these findings. Nevertheless, the most probable arises from the value attached to, and the nature of, research in STEM fields.

STEM careers, including academic careers in STEM fields, often involve research that applies knowledge and creative ideas to producing technological innovations, thus contributing directly to a nation’s economic development (Langdon et al., 2013). Indeed,
Marginson et al. (2013) declared: “STEM disciplines have become important everywhere” (p.14). Given the importance of STEM fields, many countries have been investing heavily in STEM education and research; China is no exception. With the abundant financial support, academics in STEM fields, apart from having developed a strong sense of belonging (AC) due to more frequent engagement in much needed teamwork, may also have gained a strong sense of responsibility for advancing their fields and for cultivating the next generation of STEM knowledge workers (NC); they would perceive their universities as affording them great opportunities for professional development (IC).

**Contributions of research agendas to organizational commitment, controlling for demographics**

Unsurprisingly, trailblazing research agendas (specifically, scientific ambition, collaboration, and discovery) positively contributed to the adaptive organizational commitment (AC, NC, and IC), while cohesive research agendas (i.e., convergence and conservative) positively contributed to the maladaptive organizational commitment (CC and EC). These statistically significant relationships supported Meyer et al.’s (2004) theoretical work on the association of organizational commitment with work motivation, specifically, “motivational/goal orientations,” in Dweck and Leggett’s (1988) language.

For example, academics who indicated a stronger preference for pursuing a scientific ambition research agenda scored higher on all three adaptive organizational commitments. There could be multiple ways of interpreting this finding; but using Dweck and Leggett’s (1988) notion of two types of motivational/goal orientations (mastery and performance) concerning student learning as a starting point for explaining this finding would be most appropriate. Students with a mastery goal orientation are intrinsically motivated for learning and understanding the subject content; they accept challenging tasks and work toward solutions that, in turn, lead to good performance and improvement. In contrast, students with a performance goal orientation are motivated to achieve in order to avoid being viewed as incompetent; they tend to escape from challenges and to perform simple tasks requiring low skills (Dweck & Leggett, 1988).

In the same way, when academics are aspired to become a world authority in their academic fields (a key feature of an academic’s engaging in a scientific ambitious research agenda), they could be said to have a mastery goal orientation in research. Specifically, pursuing a scientifically ambitious research agenda requires genuine interest in the research topic concerned; and it calls for strong intellectual curiosity, creative and conscientious work, and high levels of persistence and resilience. These attributes within academics could have intensified their desire to fulfill their career aspirations, that is, IC. Furthermore, because of their strong mastery goal orientation, academics pursuing a scientifically ambitious research agenda would perceive their institutional support more easily, for there is empirical evidence suggesting a close association between intrinsic motivation (a concept widely considered inseparable from mastery goal orientation; Cerasoli & Ford, 2014) and favorable perceptions of work environment (Hannam & Narayan, 2015). Such positive perceptions would be reflected from academics’ favorable rating of themselves on items measuring IC, including “I have good work environment here” and “The university stimulates my best performance.”

Equally, it is possible that the process of pursuing scientifically ambitious research has perpetuated academics’ positive feelings towards their universities (i.e., AC), for a mastery goal orientation has been found to be conducive to positive affects at work (Yildizli, 2019).
Moreover, the perceived organizational support from, and emotional bond with, their university would make academics rate themselves high on the items assessing NC (e.g., “I should be loyal to the university”).

As another example, academics who preferred collaborative research also expressed significantly stronger IC, but weaker CC. In this study, the collaboration research agenda is represented by academics’ collaborating with other scholars in publications and by their recognition that the quality and quantity of their publications were enhanced through collaboration. Their success in publications attributed to collaboration as well as the process of collaboration should have engendered not only a sense of belonging but also perceived institutional support (e.g., peer support) that is critical for the development of IC. Meanwhile, there are at least two ways in which pursuing a collaboration research agenda may have reduced the feeling of lack of job alternatives (i.e., CC). It is possible that academics’ publication success attributed to collaboration has increased their competence so that they were confident in finding alternative jobs, if necessary. It is also possible that academics’ collaboration has extended their professional network so that they were not concerned about the potential lack of job alternatives.

The finding that both cohesive research agendas (i.e., convergence and conservative) positively predicted the two maladaptive organizational commitment scales (i.e., CC and EC) could also be explained by Dweck and Leggett’s (1988) notion of two types of goal orientations. Academics who preferred cohesive research agendas could be said to have a performance goal orientation. Like students with a performance goal orientation, academics, by merely focusing on a single research area (i.e., convergence), or by only researching in stable or safe research fields (i.e., conservative), should have encountered fewer challenging and cognitively complex research tasks. Such an intellectual process, one that lacks intellectual stimulation, may still result in “success” in terms of research publication quantity. However, the success associated with such an intellectual process may not afford academics the same psychological rewards (e.g., sense of ownership, competence enhancement, and job satisfaction) as that provided by achievement as a result of engaging in pioneering research. Particularly, pursuing a convergence research agenda over a long period of time may lead to not only such feelings as boredom and a competence plateau but also knowledge entrenchment and decreased research productivity and quality of work (Shen et al., 2015). These feelings and (potentially) undesirable job performance should contribute to a feeling of lack of job alternatives (i.e., CC) and ultimately one’s staying with an institution for the money (i.e., EC).

It should be noted, however, that the conservative research agenda contributed not only to both maladaptive organizational commitments (as expected) but also to all three adaptive organizational commitments (unexpectedly). It is reasonable to state that there is abundant room for creative work in a conventional field, though not as much as there is in vanguard research fields. Thus, it is possible that while pursuing a conservative research agenda, academics, despite having chiefly developed CC and EC, were able to achieve a sense of fulfillment associated with engaging in creative work in a stable field. This sense of fulfillment might have triggered academics’ perception that their universities were conducive to their professional development (i.e., IC). Concomitantly, they may have developed an emotional attachment (i.e., AC) and loyalty (NC) to their universities. Aligned with this argument are the beta weights in Table 3 whereby those for CC and EC are both higher than those for IC, AC, and NC.
Limitations, theoretical contributions, and practical implications

Limitations

This study has four limitations that need to be overcome in future studies. First, the study adopted a cross-sectional design. As such, no causal relationship between research agendas and organizational commitment can be assumed. To truly understand how research agendas influence organizational commitment, longitudinal and qualitative investigations are needed.

Second, owing to practical constraints, using the snowball sampling method, the present researchers only recruited a relatively small sample of research participants from universities located in two regions in mainland China. Moreover, the historical background of each institution, which could have affected the research findings, was not considered. Hence, the present findings should not be over generalized. Future studies may consider overcoming these aforementioned weaknesses in research design.

Third, the present study relied on two self-report instruments for understanding the two principal research constructs. As such, on the one hand, findings obtained from self-reported data cannot be equated with those secured from objective measures. Future researchers may consider including the use of more objective evaluation procedures such as analyzing academics’ descriptions about their major research projects for a better understanding of their research agendas—and interviewing academics about why they stay with their universities for further insight into their organizational commitment. On the other hand, the interpretation of research findings from self-report questionnaires should be taken as tentative. A deep understanding of the relationships between research agendas and organizational commitment as well as their respective associations with the demographics investigated and beyond could only be achieved through qualitative research procedures.

Fourth, in addition to the four demographic variables controlled in this study, other factors at personal (e.g., academics’ personality, research efficacy), organizational (e.g., leadership styles of department heads, workload), cultural values, and institutional (e.g., university’s reward system, university ethos) levels might affect the relationship between academics’ research agendas and their organizational commitment. Future research may take these and similar factors into account.

Theoretical contributions

Despite the abovementioned limitations, the present study has made three theoretical contributions associated with three conclusions. First, the Chinese version of the MDRAI-12 (Zhang et al., 2020) has been confirmed to be a valid and reliable instrument for studying the research agendas among academics in mainland China. Furthermore, the ways in which the two types of research agendas were related to the two types of organizational commitment have, on the one hand, supported Santos and Horta’s (2018) conceptualization of the two types of research agendas and, on the other, confirmed the value-laden nature of both theoretical constructs.

Second, the present findings concerning the association of the four demographics with the two key research constructs, while contradicted particular previous findings, confirmed four consistent findings in the literature: (1) female academics are lagging behind their male counterparts in engaging in trailblazing research agendas; (2) compared with younger academics, older academics are less innovative in their research agendas; (3) compared
with senior academics, junior academics are more convergent in their research agendas; and (4) compared with non-STEM academics, STEM academics are more creative in their research agendas, and they express more adaptive organizational commitment. These consistent findings have scientific value in that future studies on research agendas and/or organizational commitment should consider these demographics.

Third, the present findings suggested that academics’ research agendas contributed to their organizational commitment in predicable ways—beyond demographics. This finding is theoretically significant because, although the two key research constructs are conceptually related, this study is the first to use theory-based measures to empirically test the relationships between them. The fact that findings on the specific ways in which the two key constructs are related to each other refuted those reported by Horta and Santos (2020) speaks volumes about the importance of adopting theory-based measures in empirical work.

**Practical implications**

The present findings have practical implications for academics and university senior managers in their respective efforts to promote innovative research and adaptive organizational commitment among academics. For example, knowing that trailblazing research agendas contribute to adaptive organizational commitment (i.e., AC, NC, and IC), academics could become more mindful of engaging in innovative research. Especially, because the present research revealed that female academics, older academics, and academics in non-STEM fields lagged behind their respective counterparts in pursuing innovative research, as did previous studies (Horta & Santos, 2020; Zhang & Horta, 2022; Zhang et al., 2020), the aforementioned groups of academics should make extra efforts in pursuing trailblazing research agendas. Moreover, because the result that academics in non-STEM fields expressed less adaptive organizational commitment confirmed previous findings (Zhang, 2015; Zhang et al., 2017), academics in non-STEM fields should be more conscious of cultivating within themselves adaptive organizational commitment by, say, engaging in innovative research.

Certainly, individuals could cultivate within themselves creative thinking and behaviors. However, individuals’ creativity needs to be nurtured by their environment (Kaufman & Beghetto, 2009). In any university, senior managers are in the best position to facilitate work environment conducive to innovative research. Reaching and maintaining the status of a world-class university require that the great majority, if not all, of the academics in an institution, are engaged in trailblazing research agendas. Allowing female academics, older academics, and non-STEM academics lag behind in pursuing innovative research would slow down the pace of a university’s marching towards (or reduce its capacity for keeping) its world-class status because the aforementioned groups constitute a large proportion of the academic force. Thus, university senior managers should identify strategies to create a work environment favorable to innovative research. For instance, based on the characteristics of the trailblazing research agendas, university senior managers could promote innovative research by encouraging academics to engage in collaborative and multidisciplinary research projects; they could reward research endeavors promising greater scientific rigor. Moreover, university senior managers could make academics’ involvement in trailblazing research more inclusive by building mechanisms for female and older academics to participate in or even lead such projects. Given the clear and consistent disciplinary differences in both research agendas and organizational commitment, university senior managers are advised to examine and address these differences systematically. Based on our earlier discussion, one possible strategy to take would be to attach stronger value to research in non-STEM fields.
Finally, it should be noted that for a university to flourish with an innovative academic force, not every academic has to pursue rocket science. Innovative and creative research can be pursued in various ways because innovations and creativity can happen at multiple levels. To borrow Kaufman and Beghetto’s (2009) work on creativity, there are big C’s (i.e., creativity of history-changing value), Pro C (creativity manifested in important works by professionals), little c’s (i.e., creativity in everyday life and work), and mini c’s (i.e., personal interpretation of events). If every academic is mindful of being creative—and if every university senior manager is conscious of nurturing innovative research (and innovative teaching, for that matter)—the university would stay as, become, or at least get closer to becoming a world-class institution that is home to adaptively committed academics.

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**Declarations**

**Conflict of interest** The authors declare no competing interests.

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