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Job adjustment of military air traffic controllers

STEPHEN ELLIOTT
James Cook University

EXECUTIVE SUMMARY

Introduction

Over the past 20 years there has been a worldwide high demand for trained air traffic controllers, which has presented military organizations with considerable challenges in training and retaining a viable workforce to handle their ATC requirements. In this context, it was considered potentially useful to examine some individual factors that influence successful job adaptation of controllers, resulting in effective performance and career longevity within a military service. A particular focus of this research was how controllers' job commitment, job satisfaction and job self-efficacy (i.e., their self-confidence in doing their job) may predict their job performance and retention within the military. The research also aimed to examine the relationship of attitudes relating both to technical ATC job performance and to non-technical military officer performance with job turnover.

The study reviewed the psychological literature relating to job attitudes and job adjustment of air traffic controllers. Key psychological variables relating to job turnover, job performance, job commitment, job satisfaction and self-efficacy were identified, and a theoretical model was proposed for how these variables might be linked in predicting military ATC Officer job adjustment. The model hypothesised that job performance and efficacy would mediate positive turnover intentions, for technical performance criteria, but not for non-technical duties. It was predicted that high technical performance and efficacy would be associated with turnover intentions, due to "pull" factors in the civilian ATC job market, while non-technical military officer performance would enhance career progression within the military and therefore be associated with staying.

Method

To test the model, two samples of military ATC Officers were surveyed, producing a combined sample of 204 respondents. 155 respondents consented to their responses being correlated with their concurrent job performance evaluations and with subsequent job turnover in the three years following the survey. Hierarchical regression analyses were conducted, correlating respondents' job attitudes and individual characteristics with their job performance assessments, their turnover intentions, and whether they had left military ATC employment within three years of completing the survey.

Major results and conclusions

The two surveys of military ATC Officers yielded a response rate of about 57 percent.

The sample includes 49 females (24 percent) and 155 males. Sixty-three (63) controllers were single, and 133 were married or in a recognized defacto relationship, with 41 percent of respondents (including three single members) having dependent children. Ages ranged between 21 and 54 years with the average being 32.3 years. Length of experience working in Tower ATC ranged from none to 28.8 years, with an average of 6.0 years ($sd = 6.2$). Of the 204 controllers, 118 were qualified in Radar Approach control, with Radar Approach experience levels ranging from 1 month to 26.3 years (mean = 6.3, $sd = 5.7$).

Results (see figure 1) were generally supportive of the theoretical model as it relates to more traditional theories of turnover and job performance. Job satisfaction with, and commitment to, the military organisation were found to predict turnover intentions, which in turn predicted actual turnover. However,

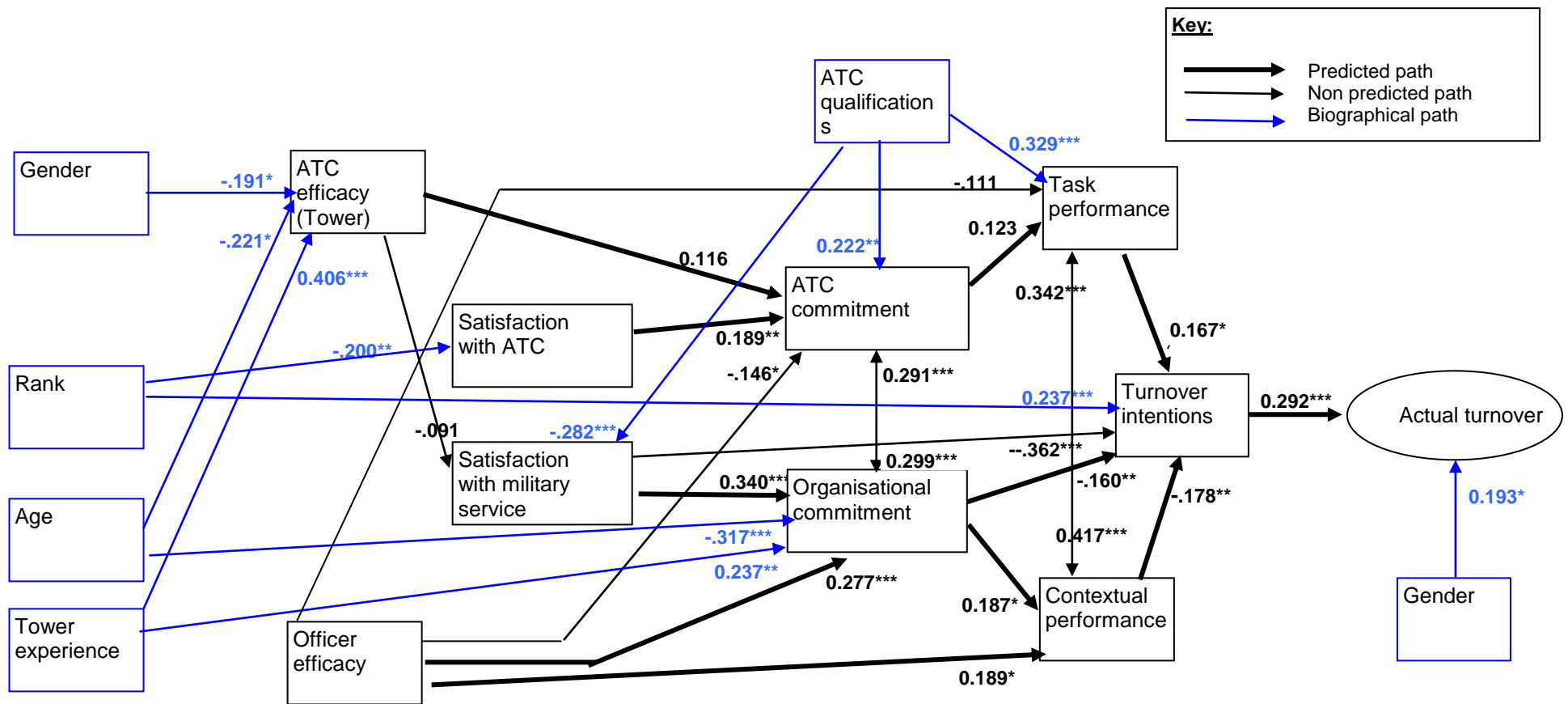


Figure 1: Regression paths derived from hierarchical stepwise linear regression analysis of all respondents (including biographical variables)

actual turnover was only weakly predicted by turnover intentions, and females were found to leave military ATC at nearly double the rate of males, despite reporting similar intentions to remain as males.

Higher ranking ATC Officers and higher ATC task performers had greater turnover intentions, possibly due to them either perceiving themselves as having greater alternative job opportunities outside the military or being more ready to take on new career challenges. It was concluded that employment and other constraints (such as being in receipt of a Return of Service Obligation to remain in military ATC employment, the extent of outside employment opportunities, current and expected employment locations, and family circumstances) might have a more direct impact on actual turnover than job attitudes.

Responses on 14 job satisfaction scales were able to be reduced to three underlying factors, satisfaction with military service, satisfaction with ATC work, and satisfaction with life outside work. Satisfaction with military service showed high factor loadings for satisfactions with: pay and conditions, opportunities for progression, required employment locations, commitment of the military organisation to supporting ATC services, and satisfaction with the military organisation. Respondents reported high levels of dissatisfaction with the military service, which was the strongest predictor of turnover intentions (along with lower organisational commitment and lower contextual performance). As expected from the literature review, dissatisfaction with military service also moderately predicted lower levels of commitment to the military organisation. However, respondents on average reported positive satisfaction with ATC work, which showed high factor loadings on satisfaction with: ATC duties, co-workers, supervision, and training. As predicted by the model, satisfaction with ATC work predicted more positive commitment to the ATC career.

Some preliminary evidence was found that social support from co-workers, both at work and outside work, had a strong impact on satisfaction with ATC, with weaker positive influences on ATC commitment. This supported a conclusion that social support from co-workers is likely to be a critical influence on the career adjustment of ATC Officers. Interestingly, co-worker support outside work appeared to have a weak positive influence on satisfaction with and commitment to military service.

The survey did not clearly identify the reasons for high female turnover, which was not directly related to other variables considered in the model. However, only six of the 49 female controllers reported having dependent children, suggesting that difficulties associated with maintaining a career in military ATC after maternity may be a significant factor.

There was also a tendency for ATC Officers to compensate for low confidence in one domain (i.e., self-efficacy for ATC tasks versus self-efficacy for non-ATC Officer tasks) with greater satisfaction and commitment in the alternative domain. This finding suggests the emergence of distinct groups of ATC Officers, distinguished by whether their vocational identification is with air traffic control or the military officer role, based on their relative levels of confidence in each domain.

A number of variables, including respondents' officer rank and task performance, were strongly influenced by their level of ATC qualifications (particularly whether or not respondents were qualified as Radar Approach controllers). It was therefore useful to compare results for the more experienced Approach controllers (see figure 2) with less experienced ATC Officers who were yet to attain a Radar Approach qualification (figure 3).

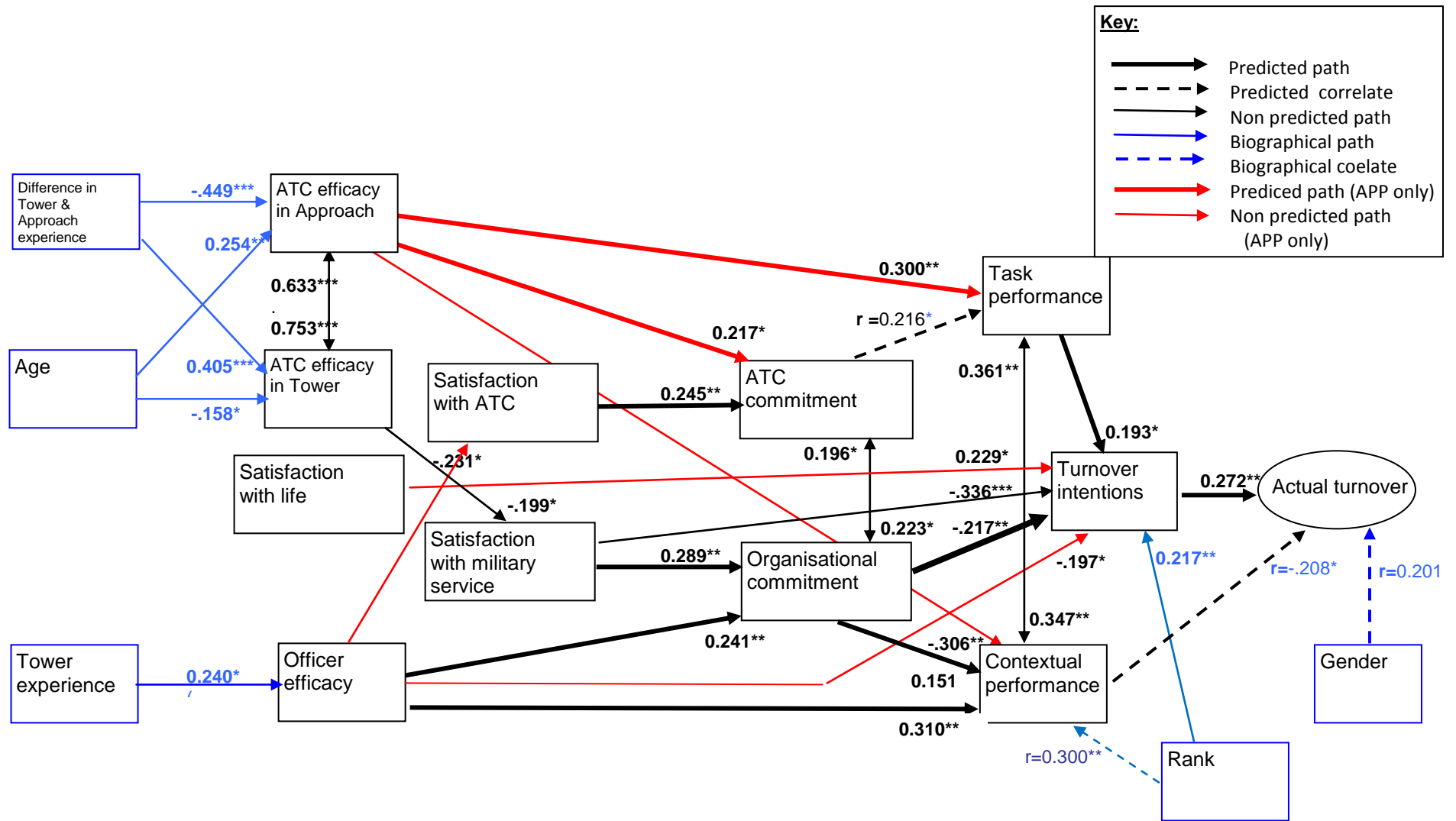


Figure 2: Regression paths derived from hierarchical stepwise linear regression analysis of Approach-qualified respondents (including biographical variables)

Approach-qualified controllers

For the more experienced Approach-qualified controller group (see figure 2 above), actual turnover was again positively predicted by turnover intentions, as well as by female gender and lower contextual performance. It is concluded that those Approach controllers who were rated more highly on their attitude to military service (contextual performance) were more likely to be promoted and therefore more likely to stay in military ATC.

Approach controllers were more likely to intend to leave military ATC if they were more dissatisfied with and less committed to military service, and also if they were rated as better performers in ATC tasks. High performers are likely to have perceived themselves as having more highly paid opportunities as civilian controllers, increasing their interest in transferring to civilian employment.

As predicted by the theoretical model, those respondents who had high self-efficacy in Approach ATC were rated more highly in their task performance and had greater ATC commitment, while those with high Officer self-efficacy were rated more highly in contextual performance and had greater Officer commitment. Interestingly, those who rated themselves as more confident in Approach control duties were less positively rated for their contextual performance. Thus, there was a clear distinction between Approach controllers' ATC task performance and Officer contextual performance, with differing attitudes affecting each.

Social support outside work was found to positively predict satisfaction with military service for Approach controllers. This finding appears to be related to Approach controllers' greater family commitments increasing the likelihood that posting them away from non-work social supports will be problematic, undermining both their satisfaction with military service and their intentions to continue serving.

Those Approach controllers who were more satisfied with their life outside work and had less self-efficacy for non-ATC Officer duties reported greater intentions of leaving military ATC, perhaps reflecting a desire to transition to civilian ATC, in order to remain in the same location for family reasons and to be employed in ATC work that did not entail additional military duties.

Non-Approach-qualified controllers

The greatest predictor of *actual turnover* of non-Approach-qualified controllers (see figure 3 below) was low task performance, with female gender again being related to increased levels of actual turnover. However, turnover intentions were not found to be a significant predictor of actual turnover. It was concluded that career adjustment to ATC work was the critical factor for these less experienced ATC Officers. They were much more likely to experience career turnover due to difficulty adjusting to the ATC role than they were to leave the military in order to work as civilian air traffic controllers, given their lower levels of technical experience and skill.

Turnover intentions of non-Approach-qualified controllers were strongly predicted by dissatisfaction with military service, and weakly predicted by low commitment to the military. In contrast to Approach controllers, those non-Approach-qualified controllers who were more satisfied with their life outside work reported less intention of leaving military ATC. It would seem that these less qualified controllers were less settled in an ATC career, and therefore more inclined to leave if they were unhappy outside of work.

The greater the social support from non-work sources available to non-Approach-qualified controllers, the greater their dissatisfaction with military service, which contrasts with the positive effect of non-work support on the satisfaction of Approach controllers. This finding is tentatively interpreted as suggesting that conflict between work and non-work (particularly family) demands may

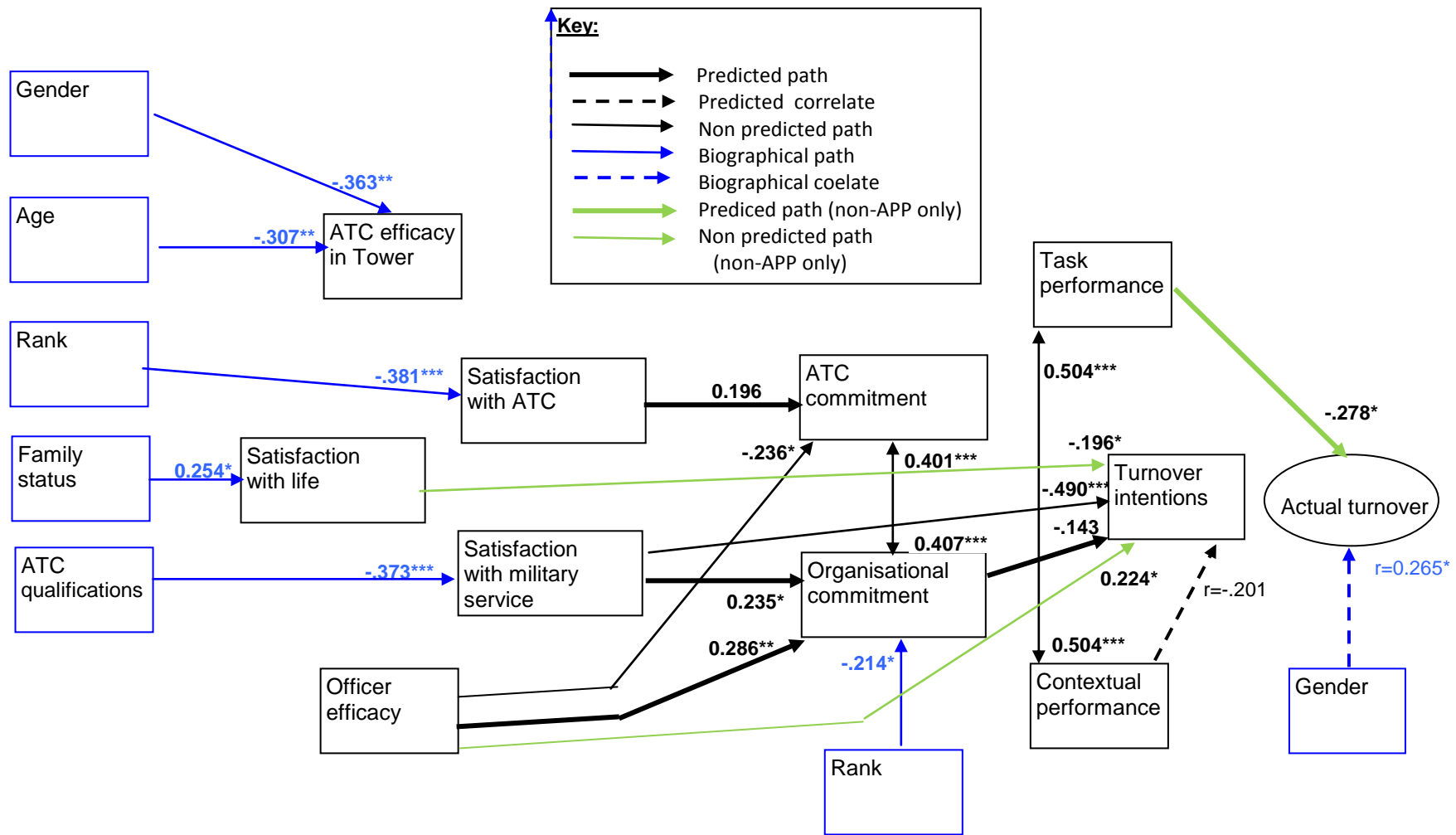


Figure 3: Regression paths derived from hierarchical stepwise linear regression analysis of non Approach-qualified respondents (including biographical variables)

be more problematic while ATC Officers are still in formative stages of their ATC career. It appears that the distractions posed by family or friends can tend to undermine successful adjustment to military ATC, while reliance on support from work peers enhances their adjustment to a military ATC career.

For non-Approach-qualified controllers, *self-efficacy in Tower* control was unrelated to any other variables, including *ATC task performance*, except that young males were found to report higher levels of confidence in their capacity to do the job. This was interpreted as indicating that less experienced ATC officers had difficulty in accurately evaluating their own levels of ATC ability in comparison with their peers, resulting in a degree of possible overconfidence by younger males.

Recommendations

Recommendations for future research and personnel management practices were made. It was noted that a number of organizational and cultural changes have occurred in the considerable time that has elapsed since the data were collected.

Recommendations included:

- a. Focusing greater attention on monitoring the influence on job turnover of changes in external employment opportunities and constraints (such as civilian ATC hiring practices, differences in pay and conditions between military and civilian employers, Return of Service Obligations, etc). It was noted that these factors can constrain or accelerate the operation of job attitudes affecting turnover intentions;
- b. Researching factors influencing the high rate of turnover of female ATC Officers, and seeking to remove barriers to their retention, such as by exploring opportunities to institute more family-friendly employment conditions;
- c. Seeking to foster a more supportive work culture for newly graduated ATC trainees, both at and outside work, in order to enhance their effective adjustment to military ATC; and
- d. Adopting a more consultative approach to career planning and postings, particularly for Approach-qualified controllers, in order to reduce external influences that might motivate ATC Officers to leave the military prematurely.