The effect of athletic expertise and trait emotional intelligence on decision-making

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Abstract

The quality of decision and assessment of risk are key determinants of successful sport performance. Athletes differ fundamentally in their decision-making ability according to their athletic expertise level. Moreover, given the influence of emotions on decision-making, it is likely that a trait reflecting emotional functioning, trait emotional intelligence, may also influence decision-making. Therefore, the aim of this research was to investigate the respective contribution of athletic expertise and trait emotional intelligence to non-athletic decision-making. In total, 269 participants aged between 18 and 26 years with a range of athletic experience i.e., none (n = 71), novice (n = 54), amateur (n = 55), elite (n = 45) and super-elite (n = 44), completed the Emotional Intelligence Scale and the Cambridge Gambling Task. Regression modelling indicated a significant positive relationship of athletic expertise and trait emotional intelligence with the quality of decision-making, and a negative relationship with deliberation time and risk-taking. Cognitive skills transfer may explain the higher decision-making scores associated with higher athletic expertise, while individuals with higher trait emotional intelligence may anticipate better the emotional consequences linked with a gambling task, which may help individuals make better decisions and take less risks.

Key Words: *Trait Emotional Intelligence; Decision-Making; Expertise; Elite Athletes; Non-Expert Athletes*.

Introduction

Athletes differ fundamentally in their decision-making ability which frequently involves deciding in high-pressure stressful environments and is positively linked with expertise (Laborde & Raab, 2013; Raab & Johnson, 2007). Moreover, research has postulated that elite athletes not only have quicker sensory processing, but also quicker cognitive processing compared to non-athletes (Mori, Ohtani, & Imanaka, 2002; Voss, Kramer, Basak, Prakash, & Roberts, 2010). Superior cognitive processing should enhance the processing efficiency of response selection utilised in decision-making paradigms (Nakamoto & Mori, 2008). Similarly, the quality of decision and assessment of risk are key determinants of successful sport performance (Raab & Johnson, 2004).

Research also indicates that individuals use emotional information to assist their decision-making in risk related tasks (Laborde, Dosseville, & Raab, 2013; Panno, Donati, Chiesi & Primi, 2015). Although emotions are often considered at the state level, some stable dispositions related to sport performance can also be highlighted (Allen & Laborde, 2014). Emotional intelligence is one of the most advanced conceptualisations in understanding the trait characteristics of emotion (Petrides, Pita, & Kokkinaki, 2007). However, very few insights exist regarding the respective contribution of athletic expertise and trait emotional intelligence (TEI) on decision-making, an area to which this paper contributes.

Emotional intelligence has been conceptualised as a meta-cognitive ability geared towards sophisticated information processing about emotions and using this information effectively in subsequent behaviour (Mayer, Salovey, & Caruso, 2008; Zysberg & Hemmel, 2018). This stable disposition reflects abilities in the expression, understanding, identification and regulation of emotions in oneself and others (Mayer et al., 2008). Emotional intelligence studied as a higher–order personality trait e.g. TEI, has been shown to explain performance variation in sport (Laborde, Dosseville, & Allen, 2016). For example, research has demonstrated that TEI can to some extent predict performance under pressure (Laborde et al., 2016; Meyer, & Fletcher, 2007). Competitive sport is an emotionally charged environment where multiple psychological processes occur almost simultaneously in quick succession (Vallerand & Blanchard, 2000). Therefore, individuals with higher levels of TEI may be better equipped to cope with these demands compared to those with lower TEI (Laborde et al., 2016). Taken together, findings would suggest that TEI may have a positive influence on decision-making involving emotional components such as risk evaluation.

Decision-making in sport is often referred to as the ability to assess important information from the environment, interpret this information accurately, and select the optimum response after having generated a set of options (Baker & Côté, 2003). Athletes with higher decision-making ability can recall previous successful experiences, assess current situations, consider more extraneous factors, evaluate potential gain-risk trade-offs, and process this quickly whilst being aware of their environment and completing other physical tasks under differing levels of fatigue (Travassos et al., 2013).

Elite athletes, in addition to presenting higher decision-making ability than their non-elite counterparts in their sport (Raab & Johnson, 2007; Laborde & Raab, 2013), may also demonstrate more effective decision-making strategies outside of sport (Gabbet, Carius, & Mulvey, 2008; Jacobsen & Matthaeus, 2014). Research has indicated that elite athletes are more successful in predicting the outcome (subsequent sequence) of specific courses of action in their own and related sports compared to non-athletes, thus displaying transference of decision-making ability (Travassos et al., 2013; Williams, Ford, Eccles, & Ward, 2010). One possible explanation is that elite athletes may adopt simple heuristic-driven decision-making strategies to cope with the demands of complex sports scenarios (Raab, 2012).

There is a lack of consensus regarding decision making in sport due to its complexity, situational components (e.g. types of risk), and broad range of tasks utilised to operationalise the construct (Laborde & Raab, 2013; Raab, 2012; Raab & Johnson, 2004). Given the componential nature of decision-making, a working definition was adopted based on; the successfulness of choosing options to complete tasks according to the constraints of the environment, together with the minimisation of risk, and the speed at which these decisions are be made. Therefore, the following research utilises a general measure of risk-taking decision-making which differentiates between components of decision-making behaviour i.e. the Cambridge Gambling Task (CGT; Kräplin et al., 2014).

Similarly, athletic expertise research remains difficult to integrate due to inconsistencies in definition (see Swann, Moran & Piggott, 2015). Swann and colleagues provide a framework for establishing athlete expertise from a review of 91 studies, consisting of predetermined criteria e.g. highest level of competition, years spent competing at this level, highest level of success, competitiveness of sport and representativeness of sport. Decision-making is yet to be studied adopting this criteria thus this research provides an important extension to understanding decision-making expertise.

Furthermore, expertise researchers postulate that cognitive skills transfer, a process whereby proficiency in one trained area of cognition is transferred to another untrained cognate area, may be responsible for the superior decision-making scores displayed in experts across domains (Jacobsen & Matthaeus, 2014; Taatgen, 2013). Romeas, Guldner and Faubert (2016) reported that 3D-multiple object tracking training improved passing ability in 23 soccer players. An experimental group completed motion object training and showed greater improvements in passing decision-making, compared to an active control group who viewed match videos, and a passive control group who received no training over a 10 week period. Additionally, research has demonstrated that performance EF in laboratory conditions predicts athletic performance in elite adult and youth soccer players (Vestberg, Gustafson, Maurex, Ingvar, & Petrovic, 2012; Vestberg et al., 2017).

Research has also indicated that experts assess athletic risk much more effectively compared to novices (Macquet & Fleurance, 2007). Furthermore, athletic risk-taking behaviour may be sport specific and only engaged when win ratios are evaluated as extremely likely (Hanoch, Johnson, & Wilke, 2006). Considering that competitive sport is an emotionally charged environment where multiple psychological processes occur almost simultaneously in quick succession (Vallerand & Blanchard, 2000), athletes may utilise affective decision-making when encountering risk i.e. a decision process incorporating emotional information marked by meaningful rewards or losses (Bracha & Brown, 2012). Research suggests athletes often have to balance rationale and emotionally driven thoughts in decision-making in order to be successful in sport (Gonzaga et al., 2014).

The sport environment is characterised by frequent experiences of risky decision-making which can be influenced by higher-order personality traits such as TEI (Raab & Johnson, 2004). Research outside of sport provides insight how TEI may assist athletes in making risk-related decisions (Mayer et al., 2008; Petrides et al., 2007). Namely, mechanisms such as emotion regulation, information processing and search, and positive cueing based on somatic markers; may help explain this link (Alkozei, Schwab, & Killgore, 2016, Alkozei et al., 2018; Damasio, 1999, Fallon et al., 2014, Panno, 2016, Pilarik & Sarmany-Schuller, 2009).

Regarding emotion regulation, research has reported a positive relationship between risk-taking on the Columbia Card Task (i.e. decision-making task) and TEI (Panno, 2016). Panno (2016) suggests that emotionally intelligent individuals may take more risks as they are more effective in coping with negative emotional responses from potential setbacks. Higher TEI is also positively related to the information search component of decision-making (Fallon et al., 2014). Whereby, TEI may drive more exhaustive search analyses thus more effective decision-making. Regarding information processing, individuals with higher TEI were found to use emotional information more effectively to make decisions outside of sport (Alkozei et al., 2016). Additionally, Alkozei et al. (2018) reported that after emotional intelligence training individuals arrived at optimal performance faster and chose more advantageous decisions on the Iowa Gambling Tasks (i.e. emotion guided decision-making). More effective decision-making may have been facilitated by an increased aptitude in processing relevant and ignoring irrelevant information. Regarding bodily markers, Damasio (1999) introduced the idea of a somatic marker hypothesis in that emotions could be used in conjunction with rational thinking to improve decision-making. Research has reported a positive association between TEI and advantageous choices on the Iowa Gambling Task, a task of the somatic marker hypothesis (Pilarik & Sarmany-Schuller, 2009).

To sum up, the joint contribution of athletic expertise and TEI to decision-making has not been studied despite their critical role in understanding sport performance. Against this background, the contribution of athletic expertise and emotional dispositions to decision-making will be assessed. Additionally, the transference of cognitive skills will be evaluated by assessing non-sport specific decision-making in a sample of athletes and non-athletes (Taatgen, 2013). Laborde and colleagues (2013) recommended that researchers in the area move towards more experimental designs in order to increase understanding of decision-making in sport. Therefore, the following research answers this call by utilising a robust measure of decision-making and risk-taking behaviour. Unlike other gambling tasks, the CGT dissociates risk-taking from impulsivity and therefore akin to facets of TEI is dependent on emotional competencies e.g. managing emotions. Based on the current review, it is hypothesized that athletic expertise and TEI will positively predict decision-making ability.

Methods

Participants

Two hundred and sixty nine participants were recruited from a university in Northern Ireland. The sample of 155 males and 114 females aged between 18 and 26 (M^{age} = 21.8 ± SD = 2.15) all spoke English as a first or second language. Participants indicated no impairment in visual acuity or cognitive function (confirmed by scores on a motion screening test which are not reported). A wide range of sports types were sampled e.g. athletics (18%), boxing (3%), Gaelic sports (12%), hockey (10%), netball (11%), soccer (16%), rugby (15%), tennis (4%), and other (10%). All participation was conducted in accordance with the requirements of the Ethical Committee of Faculty of Education, Hokkaido University.

Participants were classified based on Swann et al.'s (2015) recommendations such as highest level of competition played e.g. regional – international level, global representativeness of sport e.g. not Olympic – regular Olympic sport, time spent at current level e.g. less than 2 – more than 8 years, which resulted in a sample non-athlete (n = 71), novice (n = 54), amateur (n = 55), elite (n = 45) and super-elite (n = 44). The G*Power program (Faul, Erdfelder, Lang, & Buchner, 2007) for a priori power analysis (.80) suggested that a sample size of 265 would be required for the relevant statistical analysis e.g. multiple linear regression, with a medium effect size (.25) similar to previous research (Fallon et al., 2014).

Materials

Trait emotional intelligence was measured on the Emotional Intelligence Scale (EIS) developed by Schutte, et al. (1998). The 33-item scale is based on the Mayer, Salovey and Caruso's (2008) ability model of emotional intelligence and consists of four subscales e.g. utilisation, perception and managing of emotions in oneself, and others. A high score on the scale indicates higher characteristics of TEI scored on a five point Likert scale (e.g. "I am aware of my emotions as I experience them"). The EIS has been used extensively in TEI research in and out of sport (Lane et al., 2009). Research has reported acceptable levels of internal consistency and test-retest reliability with coefficients ranging from α = .77 – 88 and α = .71 – 74 respectively (Schutte et al., 1998). The questionnaire has also demonstrated satisfactory levels of validity (Lane et al., 2009).

The Cambridge Gambling Task (CGT) from the Cambridge Neuropsychological Test Automated Battery (CANTAB, Cambridge Cognition Ltd) was utilised to assess decision-making. The CGT assesses decision-making and risk taking behaviour outside a learning context. Relevant information is presented to the participants ‘up-front’ and there is no need to learn or retrieve information over consecutive trials. Unlike other ‘Gambling’ tasks, this test dissociates risk taking from impulsivity, because in the ascending bet condition the participant who wants to make a risky bet has to wait patiently for it to appear. On each trial, the participant is presented with a row of ten boxes across the top of the screen e.g. ten blue and red boxes in varying ratios (9:1, 8:2, 7:3 & 6:4). Participants are provided 100 starting points and had to decide whether a yellow token is hidden under a red or a blue box, staking a proportion of points on this choice being correct. The available proportion of points to be staked were 5%, 25%, 50%, 75% or 95% of the current points given in ascending (5–95%) or descending (95–5%) order in five second intervals. The test consists of five stages; a decision only stage with no betting condition, two ascending and two descending conditions were randomised and balanced within trails (eight in each stage). The overall objective of the task is to accumulate as many points as possible.

To gauge decision-making three measures were extracted: ‘quality of decision-making’, which indicates the proportion of rational decisions, i.e. the number of trials where the more likely outcome was chosen, divided by all trials; ‘Risk taking’ which was calculated as the mean proportion of points staked if the more likely outcome was chosen (i.e. if the participant choose blue if the blue boxes are in the majority) across all conditions and box ratios; ‘deliberation time’ which was the mean latency from cue presentation to the decision over all trials, to provide a complete estimation of decision-making (Kräplin et al., 2014). The CANTAB has been reported as a robust measure of cognition in clinical and non-clinical populations (Syvaoja et al., 2015).

Procedure

The study was approved by the ethics committee of a university in Northern Ireland. Participants were recruited via sports coaches and tutors in exchange for a small course credit. The study was described to participants as an investigation into decision-making in sport. Data was collected in designated laboratories under test conditions at the university sports or psychology departments. Also, all data was collected by the same investigator utilising the same instructions for all participants. Before participants began, they read and signed informed consent forms accompanied by information sheets. Participants completed the EIS followed by an initial motion screening task to ensure there were no difficulties in using the CANTAB software, and then the CGT. Testing was completed on a GIGABYTE 7260HMW BN touchscreen computer running a Pro Windows 8 operating system with a high resolution 12 inch display. Once testing was completed participants were debriefed and thanked for their participation. Data collection was discontinued once the a priori numbers of cases were collected. Data was collated and retrieved from the CANTAB and entered onto the SPSSv23 ® software program for statistical analysis.

Design & Data Analytic Strategy

The study adopted a quasi-experimental design with a purposive sampling technique. Data was screened for outliers and missing data, and checked for normality to ensure all variables met the assumptions of parametric statistical analysis (e.g. skewness & kurtosis). Descriptive statistics and Cronbach Alpha’s (α) were extracted for all necessary variables with a .70 cut-off required for stability (Tabachnick & Fidell, 2007). This was then followed by bivariate correlations to test relationships and assumptions of regression modelling (e.g.

multicollinearity). To assess the relationship between TEI and decision-making, three multiple linear regression models with stepwise entry were constructed regressing each of the CGT subcomponents (e.g. quality of decisions, deliberation time & risk-taking) on athletic expertise (dummy coded) and the four subscales of the EIS (e.g. utilisation, perception & managing of emotions in oneself & others).

Results

Descriptive Statistics & Correlations

A small number of cases (2.2%) contained missing data therefore listwise deletion was employed in line with the recommendations of Tabachnick and Fidell (2007). Box's M was non-significant ($p < .001$) therefore subsequent analyses were collapsed across gender (Tabachnick & Fidell, 2007). Descriptive statistics indicate no outliers and normal ranges of skewness and kurtosis thus meeting the assumptions of parametric analysis (Tabachnick & Fidell, 2007). The internal consistency for the EIS subscales ranged from $\alpha = .74 - .81$, indicating a good level of stability (see Table 1). Note that internal consistency estimates are not provided for the CGT as the CANTAB produces total scores for each subcomponent and therefore not possible to determine the inter-item correlation.

Insert Table 1. Here

Bivariate correlations indicate significant relationships between athletic expertise, TEI and decision-making (see table 2). The EIS subscales correlated positively with athletic expertise, while both the EIS subscales and athletic expertise correlated positively with the quality of decision-making and negatively with risk and deliberation time ($p < .05$).

Insert Table 2. Here

Regression Modelling

Analysis of the normality plots from the standardised regression residuals suggested no deviations from normality. Scatter plots, Mahalanobis and Cooks distance statistics indicated that none of the cases violated the assumptions of the regression modelling. The results (see table 3) indicated that athletic expertise was largest predictor for each model e.g. quality of decisions r^2 = .32, risk-taking r^2 = .28, and deliberation time r^2 = .22. Furthermore, the linear combination of athletic expertise and the EIS subscales predicted significant proportions of variance for quality of decisions (51%, $F(4,265) = 206.32$, $p = .002$), risk-taking (43%, $F(4,265) = 254.38$, $p = .008$), and deliberation time (36%, $F(4,265) = 1008.65$, $p = .010$).

Insert Table 3. Here

Discussion

The aim of this paper was to investigate the respective contribution of athletic expertise and TEI on decision-making in a gambling task. In general, the results supported predictions indicating superior decision-making and TEI of elite athletes. Moreover, the CGT is a general measure of decision-making supporting the theory of cognitive skills transfer, a process whereby training in one area of cognition may improve performance on a related untrained area of cognition (Taatgen, 2013; Vestberg 2012; 2017). Our findings would support the use of the CGT in athletes to investigate the influence of a range of factors on decision-making performance.

Researchers have speculated that proficiency in decision-making of elite athletes may be attributed to cognitive skill transfer as athletes regularly engage in complex cognitive and physical tasks (Jacobsen & Matthaeus, 2014; Romeas et al., 2016; Williams et al., 2010). Taatgen (2013) noted that decision-making was a multifaceted process and that similar cognitive abilities would share the largest degree of transfer. Therefore, athletes who regularly engage in complex cognitive processes may develop increased proficiency in decision-making (Jacobsen & Matthaeus, 2014; Romeas et al., 2016, Voss et al., 2010).

Regarding quality of decision-making, results indicated a positive relationship with athletic expertise and TEI (p = .002). The significant contribution of athletic expertise to higher quality decisions i.e. the mean proportion of trials where the participant selects the correct colour outcome, is consistent with previous research reporting superior decision-making ability of elite athletes (Gabbet, et al., 2008 Travassos et al., 2013). The positive relationship may be explained by increased ability of affective decision-making, a decision process incorporating emotional information marked by meaningful rewards or losses (Bracha & Brown, 2012).

Athletes often have to balance rationale and emotionally driven thoughts in decision-making in order to be successful in sport (Gonzaga et al., 2014). Furthermore, elite athlete's superior decision-making may be a practice effect from participation in elite sport e.g. the emotionally charged sports environment provides athletes with the opportunity of practising quick decisions under pressure.

These findings also suggest that individuals with higher levels of TEI make decisions with higher quality in comparison to individuals with lower TEI levels. This coincides with previous data reporting a facilitative effect of TEI on decision-making (Alkozei et al., 2016; Alkozei et al., 2018; Fallon et al., 2014; Pilarik & Sarmany-Schuller, 2009). Moreover, athletes with higher TEI may be more proficient at regulating emotion and achieving optimal mood states associated with improved performance (Lane et al., 2010). Note, these strategies are also associated with recognising emotional states which may help identify somatic markers which aid decision-making (Damasio, 1999).

Regarding risk-taking behaviour, the results indicated a negative relationship with athletic expertise and the EIS subscales (p = .008). The negative relationship between athletic expertise and risk-taking i.e. the mean proportion of points bet on trials where the most likely outcome was chosen, suggests that elite athletes took less risks in their decision-making. This coincides with previous research which reported more effective risk-taking strategies of athletes (Macquet & Fleurance, 2007; Raab & Johnson, 2004). In this regard, previous research indicated that athletic experts may evaluate situations more effectively by viewing risk as opportunities rather than threats, and as a result may make less errors in evaluating risk ratios (Panno, 2016; Panno et al., 2015; Raab, 2012).

For TEI, the negative relationship with risk-taking differs with Panno (2016) and Panno et al. (2015) who reported a significant positive relationship between TEI and risk-taking. The negative relationship found may be explained by an increased proficiency in cognitive reappraisal i.e. manipulating emotional stimulus to facilitate performance (Heilman, et al., 2010). Individuals with higher TEI have higher emotional regulation which enables individuals to evaluate risks more effectively e.g. low fear of failure from having the ability to bounce back from losses (Panno et al., 2016; Petrides et al., 2007). The research of Meyer and Fletcher (2007) suggested that aptitudes in TEI facilitate a range of positive abilities such as impulse control, which can enhance decision-making in sport. This may provide an advantage to athletes in decision-making, particularly in risk-taking behaviour, with the ability to focus adequate attentional resources towards making decisions.

Lastly, results indicated a negative relationship between deliberation time and athletic expertise and TEI (p = .010). The negative relationship between athletic expertise and deliberation time i.e. mean time taken to make a box colour response, suggests that elite athletes make faster decisions. This coincides with previous results indicating that elite athletes may have more efficient information processing and as a result better decision-making strategies i.e. less deliberation (Hanoch, Johnson & Wilke, 2006; Macquet & Fleurance, 2007).

Regarding TEI, findings suggest that individuals with higher TEI made faster decisions. Similar to quality and risk, athletes may use emotional information to aid decision-making e.g. selecting the most relevant emotional cues, and emotional skills e.g. managing emotions to ignore negative thoughts, to make quicker decisions (Lane et al., 2010). Laborde, Dosseville and Scelles (2010) reported contrasting findings with a weak positive relationship between TEI and a deliberative decision-making style. However, in the study by Laborde et al. (2010) deliberation was assessed by a trait self-report questionnaire, while in the current study deliberation was measured by a decision-making task.

Despite several strengths e.g. a strict framework for classification of elite athletes and a robust measure of decision-making, the current research is circumspect to limitation. First, the decision-making lacks ecological validity in comparison to sport-specific performance based measures e.g. the simulated risk and reward may not be transferable to passing strategies in soccer. Nonetheless, it was necessary to provide a general measure of decision-making in order to remove biases associated with practice and learning effects between athletes and non-athletes. Second, the design was largely correlational therefore direction and causality cannot be determined. Finally, the study utilised a self-report measure of TEI which may subject the data to increases in error and biases e.g. social desirability. Moreover, research has indicated that the EIS may be problematic in use with athletes (Vaughan & Laborde, 2018). For example, Lane et al. (2009) removed 13 items to find acceptable fit in their data thus results should be interpreted with caution.

To remedy these concerns future research should replicate these findings with the EIS or alternative trait emotional intelligence scales (e.g., Trait Emotional Intelligence Questionnaire; Petrides, 2009). Additionally, researchers should adopt designs with greater control such as longitudinal, in order to examine this relationship over the course of a season at multiple time points. Future research may also wish to combine perceptual-cognitive measures of decision-making which are specific to one sport or one type e.g. combat, with general measures to extend the current findings. Moreover, the types of decisions deployed by athletes may be dependent on the type of sport and future research should explore this effect along with its influence on performance related outcomes. Finally, future research may wish to investigate the possible mediation factors (e.g. motivation or attentional control) on the interplay between TEI, athletic expertise and decision-making. Alternatively, researchers should incorporate experimental manipulations into their designs examining the effect of emotional intelligence training and assessing the impact of such interventions on decision-making performance (Alkozei et al., 2018; Laborde et al., 2016).

In conclusion, the following research is the first investigation to examine the influence of both athletic expertise and TEI on decision-making in sport. The findings indicated a positive relationship between athletic expertise and TEI with quality of decisions, and a negative relationship of athletic expertise and TEI with risk-taking and deliberation time. The findings largely corroborate previous research indicating a facilitative link between athletic expertise and TEI with decision-making ability (e.g., higher quality, less risk and deliberation), on a non-specific decision-making task (Alkozei et al., 2016; Alkozei et al., 2018; Fallon et al., 2014; Panno, 2016; Pilarik & Sarmany-Schuller, 2009). The significant relationship between TEI and decision-making demonstrated a combined effectiveness that may be tapped during athletic performance. Elite athletes with higher TEI may utilise their emotional abilities to accurately appraise situations and then utilise their cognitive ability to process the information thus extending our understanding of decision-making in sport beyond simple heuristics (Raab, 2012). Therefore, athletes may use a combination of cognitive and emotional abilities to make more effective decisions which may improve sport performance.

Declaration of Conflicting Interests

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Table 1.

Means, Standard Deviations, Skewness, Kurtosis, and Internal Consistencies for EIS Subscales and CGT Subcomponents.

Scale	M (SD)				Skewness	Kurtosis	α
	Elite	Amateur	Non-Athlete	Total Sample			
EIS							
Others	31.34 (3.44)	28.14 (3.79)	27.68 (4.55)	29.65 (4.02)	-.44	.98	.74
Managing	35.49 (4.02)	34.66 (4.23)	30.87 (5.28)	34.75 (4.53)	-.69	.74	.81
Perception	39.42 (4.56)	37.02 (5.10)	35.19 (5.77)	37.32 (5.21)	-.71	.99	.78
Utilisation	28.99 (2.91)	23.55 (3.44)	20.96 (3.84)	24.50 (3.31)	-.35	.95	.76
CGT							
Quality of Decisions	.95 (.08)	.90 (.09)	.85 (.12)	.92 (.10)	-.70	.49	
Risk Taking	.43 (.11)	.45 (.14)	.51 (.19)	.46 (.15)	-.11	.22	
Deliberation Time	1647.22 (382.64)	2019.54 (412.32)	2384.90 (451.33)	2017.22 (411.08)	-.12	.33	

EIS = Emotional Intelligence Scale, CGT = Cambridge Gambling Task. N = 269.

Table 2.

Correlation Matrix for Athletic Expertise, EIS and CGT

	Expertise	*Other*	*Manage*	*Perceive*	*Utilise*	*Quality*	*Risk*
Other	.19*						
Manage	.20*	.50**					
Perceive	.21*	.52**	.37**				
Utilise	.24*	.49**	.49**	.37**			
Quality	.51*	.36**	.39**	.35**	.35**		
Risk	-.47*	-.18*	-.17*	-.19*	-.26*	.13	
Deliberation	-.41*	-.19*	-.19*	-.21*	-.25*	.33**	.11

* significant at .05 ** significant at .01. Expertise = Athletic Expertise. N = 269.

Table 3.

Regression Analyses Predicting CGT Components from Athletic Expertise and EIS Subscales

Model		R^2	ΔR^2	**Std. error**	**β**	**t**
Quality of Decisions						
1	Expertise	.318**		.047	.37	12.54**
2	Expertise	.412**	.094**	.058	.31	10.45**
	Utilise			.064	.23	9.73**
3	Expertise	.496**	.084**	.053	.33	11.87**
	Utilise			.084	.22	9.83**
	Perceive			.091	.21	10.76**
4	Expertise	.511**	.017*	.089	.35	11.87**
	Utilise			.010	.24	10.72**
	Perceive			.116	.21	9.58*
	Manage			.124	.20	8.91*

	Other	.512**	.001	.158	.09	1.14
Risk Taking						
1	Expertise	.282**		.051	-.29	11.08*
2	Expertise	.368**	.086**	.067	-.28	13.51**
	Utilise			.074	-.21	9.98*
3	Expertise	.411**	.043**	.071	-.29	12.74**
	Utilise			.084	-.22	10.36*
	Perceive			.095	-.20	9.92*
4	Expertise	.431**	.020*	.084	-.31	11.63*
	Utilise			.092	-.24	10.45
	Perceive			.098	-.22	9.73*
	Manage			.105	-.18	8.18*
	Other	.433**	.002	.158	-.07	1.07
Deliberation Time						
1	Expertise	.219**		.077	-.29	12.91*
2	Expertise	.307**	.088**	.085	-.26	11.53*
	Utilise			.092	-.22	10.72*
3	Expertise	.333**	.026**	.094	-.27	11.84**
	Utilise			.099	-.22	10.52*
	Perceive			.108	-.19	9.72*
4	Expertise	.355*	.022*	.088	-.28	13.78**
	Utilise			.102	-.24	11.62*
	Perceive			.112	-.21	10.80*
	Manage			.115	-.19	9.56*
	Other	.359*	.003	.187	-.09	1.24

* significant at .05 level, ** significant at .01 level. Expertise = Athletic Expertise. N = 269.