1   **Motivational differences between 5K, half marathon and full marathon participants in**

2   **the UK and India.**

3   Amy E Whitehead[1]. Email: A.E.Whitehead@ljmu.ac.uk

4   Kanayo Umeh[2]. Email: F.K.Umeh@ljmu.ac.uk

5   Camilla Brockett [3]. Email: Camilla.Brockett@vu.edu.au

6   Hans Westerbeek[3]. Email: Hans.Westerbeek@vu.edu.au

7   Emma Powling[1], Email: emmapowling1994@gmail.com

8   Katie Fitton Davies[1], Email: K.FittonDavies@2017.ljmu.ac.uk

9   James Rudd[1,3], Email: J.R.Rudd@ljmu.ac.uk

10

11   [1] School of Sport and Exercise Sciences, Liverpool John Moores University, United Kingdom

12   [2] School of Natural Science and Psychology, Liverpool John Moores University, United

13   Kingdom

14   [3] Institute of Sport, Exercise and Active Living, Victoria University, Australia

15   IRB Approval Number: **17/ELS/006**

16

17

18

19

20

21

22

23

24

25

26   **Title: Motivational differences between 5K, half marathon and full marathon**

27   **participants in the UK and India.**

28

29   **Abstract**

30   Purpose: There is a lack of research in the motivational differences of runners engaging in

31   differing distance events and in different countries. Therefore, this study compares participant

32   motives of 5K, half marathon and full marathon runners registered in a UK and an Indian

33   event; comparisons between nations were conducted. Method: 1022 participants completed

34   an adapted version of the Motivation of Marathons Scales (Masters, Ogles, & Jolton, 1993),

35   431 from a UK event and 591 from an Indian event. Confirmatory factor analysis (CFA) and

36   exploratory factor analysis (EFA) were used to identify an improved factorial solution for the

37   data. Multivariate analysis was performed to assess differences in event type (5K, Half, Full)

38   across five latent motivational constructs: social, physical fitness, self-esteem, achievement in

39   competition, and physical health. Nationality, gender, age, employment status, and

40   educational level were treated as moderating factors, or covariates. Results: 5K runners

41   scored higher than half and full marathon runners in the self-esteem, physical fitness, and

42   achievement motives. Males scored higher on the achievement motive. The Indian sample

43   scored higher than the UK sample in social motives. Practical implications: considerations for

44   event organisers are discussed. Research contribution: new findings underpinned by SDT

45   across running event and country.

46

47   Key Words: Motivations, Sport, Physical Activity, Exercise.

48

49

50

51 **Introduction**

52 Large-scale running events such as marathons are becoming increasingly popular, leading to

53 increased participation and an influx in the number of marathons now offered worldwide

54 (Ridinger, Funk, Jordan & Kaplanidou, 2012, Allison, 2010). These events have expanded

55 from being a single marathon event to offering half-marathons and 5-kilometre (5K) events,

56 thereby appealing to a wider audience with varying motivations driving their participation

57 and engagement. The 5K race has become the most prevalent distance run in the USA (Bell

58 & Stephenson, 2014) and is growing in popularity within the UK with 612 Park Runs being

59 held over the UK each week (and this number is growing) and an estimated 1,979,962

60 registered park runners (Park Run, 2019). Given that these mass events have been found to

61 serve as a facilitator towards increasing levels of physical activity (Funk et al., 2010; Bunning

62 & Walker, 2016), they are an area of worthy of investigation. To better understand the

63 driving motives of why tens of thousands of people engage in these types of activities is

64 important, particularly as committing to a marathon/ running event often includes dedicated

65 physical activity (training) in the build up to, as well as during the event while balancing

66 other life commitments such as full time work and family (Stebbins, 1992). This is somewhat

67 contrary to the trend of physical inactivity observed across the general population.

68

69 To date our understanding of motives for engagement in running events has focussed mainly

70 on full marathons and include physical health, psychological health, self-image, affiliation,

71 achievement, rewards, social influence and availability (Ogles & Masters 2000, Carmack &

72 Martens, 1979). A factor analysis of 500 runners' responses culminated in six categories of

73 motives for participation: social, status, addiction, well-being, health/fitness and challenge

74 (Crandall, 1980). These similarities in motives have been found between genders (Ziegler,

75 1991), ages (Ogles & Masters, 2000) and previous marathon experience (Havenar &

76 Lochbaum, 2007). Hanson, Madaras, Dicke and Buckwoth (2015), examined the motivations

77 of half marathoners, full marathoners and ultra-marathoners. Their findings revealed that

78 ultra-marathoners scored lower on health orientation and weight concerns and higher on life

79 meaning than marathoners and half marathoners. Similarly, Shipway and Holloway (2010),

80 found that within 'serious' runners (from 5K to marathon runners), motives were focused on

81 the desire to embrace a healthy lifestyle and that running has the potential to facilitate

82 increased participation in exercise as part of an active and healthy life. These findings cannot

83 be generalised to all runners, given that these participants were classed as being in the

84 'serious leisure' category (Stebbins, 1992).

85

86 As there is a paucity of research in regard to 5K events, Ogles, Masters and Richardson

87 (1995) used the Motivation for Marathon Survey (MOMS) to understand participant motive

88 and training habits in runners. They compared recreational runners (running 5K, training less

89 than 15 miles per week and never completed a marathon) to obligatory runners (registered for

90 the marathon and training more than 45 miles per week). Ogles et al. (1995) found that

91 obligatory runners were more orientated towards competition and personal goal achievement,

92 whereas recreational runners were more orientated towards physical wellbeing and general

93 health. More recently, Bell & Stephenson (2014) examined the variation in motivations by

94 running ability in individuals engaging in 5K races. They found that factors such as

95 competition were more prevalent in high and medium ability runners and social affiliation

96 and health motives evident in lower ability runners. *"An appreciation and sensitivity to these*

97 *social factors is crucial if initiatives aimed at increasing people's well-being are to succeed"*

98 (Wray, 2007, p. 142).

99

100   Zach, Xia, Zeer et al., (2017) identified that a lot of previous research investigating motives

101   for marathon or running events focused solely on motive identification and did not consider

102   any conceptual framework. Zach et al., (2017) proposed self-determination theory (SDT)

103   (Deci & Ryan, 2000) as a potential theory to explain motives for engaging in such events.

104   SDT is framed in a way that social and environmental factors are seen to facilitate or

105   undermine intrinsic motivation (taking part in an activity for purely the inherent pleasure in

106   doing so) (Ryan & Deci, 2000). Basic Psychological Needs Theory (BPNT), a mini-theory of

107   SDT, examines relations between basic psychological needs and well-being (Ryan & Deci,

108   2017). The basic psychological needs are *competence;* which refers to experiencing

109   satisfaction in demonstrating their capabilities in optimal developmentally-based challenges

110   (Deci & Ryan, 2000), *autonomy*; where the individual perceives their actions to be volitional

111   (Deci & Ryan, 2000) and *relatedness*; the need to seek out connected relationships with

112   others (Deci & Ryan, 2000). Individuals who perceive these three basic psychological needs

113   to be satisfied are more likely to experience autonomous motivation for the behaviour within

114   that social environment. Autonomous motivation is an umbrella term for people experiencing

115   either intrinsic, integrated or identified regulation; where individuals engage in a behaviour

116   for the inherent pleasure of the behaviour, have integrated the behaviour within their sense of

117   self or identify with the benefits of that particular behaviour, respectively. Having high

118   autonomous motivation indicates an individual is more self-determined within a certain

119   behaviour which leads to well-being and flourishing within that environment. Autonomous

120   motivation is in contrast to controlled motivation which is an umbrella term for people

121   experiencing introjected or external regulation. Individuals feel introjected when they feel

122   they ought to or should partake in a behaviour, while individuals who are governed by

123   external regulations partake in a behaviour due to some behavioural contingent such as to

124   gain a reward or to avoid punishment. In essence, they feel controlled by external forces.

125   Much research has demonstrated that environments promoting the three basic psychological

126   needs result in high persistence and improved motivational consequences (Joesaar, Hein, &

127   Hagger, 2011; Sylvester, Standage, Ark et al., 2014). Therefore, it may be important to take

128   theories such as Self-Determination theory into account when conducting research on

129   participation motives towards running events. For example, taking into consideration Bell &

130   Stephenson's (2014) research and SDT, it could be assumed that lower ability runners may

131   engage in these types of events as they perceive an opportunity for relatedness while higher

132   ability runners may perceive opportunities for competence. Race events are optional and

133   therefore offer autonomy for everyone, especially those with more than one race length.

134

135   Partaking in a particular type of race may also be influenced by culture. Cejka, Rüst, Lepers,

136   Onywera, Rosemann & Knechtle (2014) outlined differences in ethnicity according to race

137   type with Kenyan and Ethiopian runners dominating the middle- and long-distance events

138   (Wilber & Pitsiladis, 2012) and Europeans and the Japanese tending to dominate ultra-

139   marathons with African and Australian runners being in the minority (Knechtle, Rüst &

140   Rosemann, 2013; Lenherr, Knechtle, Rüst, Rosemann & Lepers, 2012). Further

141   considerations of much of the current literature on running event motives do not take into

142   account cultural differences between countries, and little is known about the motives across

143   different distances within and between different cultures (Hanson et al., 2015). Research has

144   been able to identify geographical participation trends within endurance runners (Cejka et al.,

145   2014), however, the motives of these runners across different countries is yet to be examined.

146   Therefore, motivations for participating between race types may differ but also country of

147   origin may be a variable that influences this motivation. Attempting to fill this gap in

148   knowledge would be beneficial as with migration and sport tourism travel across the world

149   increasing this means that not only do running event organisers need to cater to their native

150 runners and their motivations for participation but also for those of different geographical

151 locations. Also, many running event organisers now cater for the younger demographic with

152 1-mile fun runs included within the events along with events such as 5K Park Run advertising

153 their events as family friendly. It would not be too far fetched to expect higher numbers of

154 children and adolescents participating in 5K runs and longer. A review of qualitative studies

155 by Allender, Cowburn & Foster (2006) found that of the 24 papers that fit their criteria

156 (explored reasons for participation or non-participation, data collected in the United Kingdom

157 and data collected using qualitative methods), only two included children. Allender et al

158 (2006) collated children's (ages 5-15) reasons for participation in physical activity (PA) as

159 experimentation, unusual activities, parental support and safe environment. Barriers to

160 participating in PA were competitive sports and highly structured activities. With race events

161 attempting to appeal to younger runners and with a notable paucity of research exploring

162 children in running, it would be opportune to explore motivational differences in the younger

163 demographic so that organisers may further understand how to appeal to the younger

164 audience.

165

166 Therefore, the aim of this study was to develop this area of research by gaining an

167 understanding of the motivational differences between 5K, half marathon and full marathon

168 runners and to explore differences between two countries and age groups within these events.

169

170 **Methodology**

171

172 *Design*

173 The study was based on a cross-sectional survey incorporating a between-group 3 (*Marathon*

174 *type*: 5K, Half, Full) × 2 (*Nationality*: Indian, UK) × 2 (*Gender*: Male, Female) ex-post-facto

175   factorial design (quasi-experimental research study). The outcome variables were constructs

176   based on a modified version of the Motivation of Marathon Scale (MOMS) (Masters, Ogles

177   & Jolton, 1993). The precise factorial structure was evaluated using factor analysis, to

178   determine whether the data fits the assumed measurement model (see below). The main

179   confounding factors of concern were *age*, *employment status*, and *educational level*. These

180   variables were treated as covariates.

181

182   ***Participants***

183   The sample comprised 1022 children and adults aged between 13 and 77 years (Mean age =

184   39.65, SD = 10.75), living in the UK or India. Frequency data indicates that nearly half of

185   respondents (46.1%) engaged in a 'half-marathon'. A much smaller proportion (15.9%)

186   performed a 'full marathon', while slightly over 1 in 5 respondents (22.8%) took part in a '5K

187   marathon'. The sample was predominantly male (67.8%), and Indian (57.9%). Institutional

188   ethical approval was secured by the first author's institution and informed consent obtained

189   from all participants prior to testing.

190

191   ***Instruments***

192   ***Instruments***

193   A modified version of the MOMS (Masters, Ogles & Jolton, 1993) was used. This survey

194   was modified and the number of questions were reduced from 56 to 21. For the purpose of

195   this study five constructs were measured: social motives, physical health motives, self-esteem

196   (psychological), achievement motives linked to competition, and personal goal achievement

197   (see Table 1) (Masters, Ogles & Jolton, 1993). Prior to data collection, the research team met

198   to discuss the rationale for reducing the items. The number of items was reduced for two

199   reasons. As this survey was part of a wider project, and participants completed it prior to

200   engaging in a marathon event (either emailed prior to the event or during the day or

201   registration or the day of the event) it was deemed that 56 items in addition to other questions

202   (outside the scope of this study) was too long for the recommended ideas survey length of 10

203   minutes (Revilla & Ochoa, 2017). Secondly, when reviewing the survey, the research team

204   were focused on the five concepts within the MOMS survey (as stated above) and each

205   concept was reviewed to achieve parsimony. If these items were deemed similar, then one (or

206   more) of these items was removed. For example, the concept of physical health motives

207   included items around improving health, prolonging life, becoming fit etc. The following

208   items were removed, *to look leaner, to help control my weight, to reduce my weight*. Within

209   this concept, 5 items remained. This process was repeated for each of the above concepts,

210   with 3-5 items remaining in each construct. The social motives construct was assessed with

211   questions such as 'to socialise with other runners', 'to have something in common with other

212   people', 'to meet people' were used (C' Alpha = 0.82). Within the physical health motives,

213   questions such as 'to improve my health', 'to prolong my life', 'to become more physically

214   fit' were employed (C' Alpha = 0.81). Within the self-esteem motives questions such as 'to

215   improve my self-esteem', 'to feel more confident about myself', 'to feel proud of myself'

216   were used (C' Alpha = 0.79). Personal goal achievement was assessed with items such as 'to

217   compete with myself', and 'to push myself beyond current limits' (C' Alpha = 0.67). Finally,

218   within achievement motives questions such as, 'to compete with myself', to push myself

219   beyond my current limits and 'to be if I can beat a certain time' were used (C' Alpha = 0.68).

220   ……………………………..

221   Insert Table 1 here

222   …………………………..

223

224   ***Procedure***

225 Following ethics approval by the host institution, the survey was converted into an online

226 survey format for the UK event. This survey was then sent via email to all participants

227 engaging in a national marathon event, which also involved a 5K and a half marathon.

228 Participants had the opportunity to complete the survey 4 weeks prior to the event. For the

229 India event, face-to-face surveys were conducted with participants; on the day of registration/

230 kit collection, or on the day of the event.

231

232 *Data analysis*

233 Confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) were used to test

234 the fit of the modified MOMS structure to our data, using IBM SPSS/AMOS software

235 (Version 26). CFA fit statistics were based on recommendations published by Hu and Bentler

236 (1999). A $3 \times 2 \times 2$ between-groups MANCOVA was then conducted using IBM SPSS

237 software (Version 26) to assess how group differences in marathon event type (5K, half, full),

238 nationality (Indian/UK), and gender (male/female) categorisations, relate to the motivational

239 constructs. The analysis tested for both main effects of the three grouping or 'independent'

240 variables, and also their two-way effect. Age, employment status, and educational level were

241 treated as covariate variables. Finally, Pillai's criterion rather than Wilks' Lambda was used

242 to assess the significance of multivariate effects. Some evidence suggests the former is more

243 robust than Wilks' Lambda to any violations of model assumptions (Tabachnick & Fidell,

244 1996, p.80).

245

246 **Results**

247 *Confirmatory and exploratory factor analysis*

248 CFA was first used to test the fit of the adapted MOMS structure, consisting of 21 items

249 which loaded on 5 latent factors: 6 on physical health (PHM), 5 on social motives (SOM), 3

250 on achievement motives linked to competition (ACM), 3 on personal goal achievement

251 (PGA), and 4 on self-esteem (SEM). The following fit general cut-off criteria for fit indices

252 were used (Hu & Bentler 1999): $\chi 2 =$ non-significant ($p > 0.05$), $\chi 2/df < 5$, root mean square

253 error of approximation (RMSEA) < 0.08, and Comparative Fit Index (CFI) > 0.80. CFA of

254 this initial 5-factor model provided the following parameters, $\chi 2 = 1567.39$, df $= 179$,

255 p <0.001, $\chi 2/df = 8.75$, RMSEA $= 0.09$, CFI $= 0.83$. These parameters indicated that the 5-

256 factor model did not fit the data well, providing at best a 'moderate' fit (Hu & Bentler, 1999).

257 Consequently, we decided to test a 4-factor model, excluding personal goals construct which

258 generated the lowest Cronbach's alpha coefficient. This 4-factor model appeared to provide a

259 slightly better fit to the data, generating the following parameters, $\chi 2 = 1110.22$, df $= 129$,

260 p <0.001, $\chi 2/df = 8.60$, RMSEA $= 0.09$, CFI $= 0.86$ (Hu & Bentler, 1999) (see Figure 1).

261

262 Due to the overall poor fit indices, it was decided to investigate the best factorial solution for

263 the current data using EFA, with maximum likelihood method used for extraction. Five latent

264 factors were extracted, based on the $\lambda > 1$ rule, accounting for 51.30% of the variance

265 ($\chi 2 = 636.56$, $df = 115$, p <0.001). These factors were labelled social (SCL), physical fitness

266 (PFI), self-esteem (SEM), achievement linked to competition (ACP), and physical health

267 (PHE). Factor loadings > 0.40 were used to link the 21 manifest variables with the 5 latent

268 factors: 5 items loaded on SCL (e.g. "to socialise with other runners") (C'Alpha $= 0.82$), 4 on

269 PFI (e.g., "to become physically fit") (e.g., C'Alpha $= 0.76$), 4 on SEM (e.g., "to improve my

270 self-esteem") (C'Alpha $= 0.79$), 5 on ACP (e.g., "to compete with others") (C'Alpha $= 0.72$),

271 and 3 on PHE (e.g., "to reduce my chance of having a heart attack") (C'Alpha $= 0.79$). CFA

272 was then performed again to evaluate this new 5-factor model (see Figure 1). This generated

273 the following estimates, $\chi 2 = 1386.67$, df $= 179$, p <0.001, $\chi 2/df = 7.74$, RMSEA $= 0.08$, and

274 CFI $= 0.85$, suggesting this new model provides a better fit to the data compared (e.g.,

275 RMSEA = 0.08), compared with the previous two models (e.g., RMSEA > 0.08). Thus, the

276 new model was used for multivariate analysis.

277   …………………………..

278   Insert Figure 1 here

279   …………………………..

280

281 *Descriptive statistics*

282 *Table* 2 shows the bivariate correlations, means, and standard deviations for the study

283 variables. Age was negatively associated with physical fitness, self-esteem, and achievement

284 motives linked to competition, such that older respondents were less motivated in all three

285 areas. There was no covariance between age and the two other motives – social and physical

286 health. Positive correlations emerged between all five motivational constructs – social,

287 physical fitness, self-esteem, and achievement motives linked to competition, and physical

288 health, whereby individuals highly motivated in one area also tended to be strongly motivated

289 in other areas. The mean values for motivational constructs are difficult to compare due to

290 differences in range. However, the standard deviations suggest highest dispersion for social

291 motives, and the least variation for the physical fitness motive.

292   …………………………..

293   Insert Table 2 here

294   …………………………..

295 **Multivariate analysis**

296 Levene's tests for equality of error variances suggests homoscedasticity wasn't met for

297 physical fitness (F (11, 765) = 3.85, $p < 0.05$), self-esteem (F (11, 765) = 3.73, $p < 0.05$), and

298 achievement motives (F (11, 765) = 1.83, $p < 0.05$), which may consequently have attenuated

299 effect sizes, and inflated the type 2 (false negatives) error rate. Nevertheless,

300   heteroscedasticity wasn't fatal to the analysis, as the linear association between variables is

301   still captured (Tabachnick & Fidell, 1996, p.80). Box's M = 319.19, F (150, 21448.25) =

302   1.97, p <0.001, suggested unequal covariance matrices of the dependent variables across

303   groups. However, this test has been described as overly sensitive, and as already indicated,

304   we used Pillai's criterion instead of Wilks' Lambda when evaluating multivariate

305   significance (the former test is more robust to violations of the assumption of homogeneity of

306   covariance matrices) (Tabachnick & Fidell, 1996, p.382, p.401). Multivariate tests revealed

307   significant effects for age (Pillai's Trace = 0.06, F (5, 758) = 10.99, p < 0.05, η_p^2 = 0.06),

308   event type (Pillai's Trace = 0.02, F (10, 1518) = 2.20, p < 0.05, η_p^2 = 0.01), Gender (Pillai's

309   Trace = 0.04, F (5, 758) = 6.37, p < 0.01, η_p^2 = 0.04), a Event x Gender interaction (Pillai's

310   Trace = 0.03, F (10, 1518) = 1.91, p < 0.05, η_p^2 = 0.01), and a Nationality x Gender

311   interaction (Pillai's Trace = 0.02, F (5, 758) = 4.17, p < 0.05, η_p^2 = 0.02).

312

313

314

315   ***Main effects of Marathon, Gender, Nationality***

316   A number of significant univariate effects emerged for Event type, Nationality & Gender (see

317   *Table* 3). Event type had a significant univariate effect on self-esteem motives, F (2, 762) =

318   3.77, p < .05 (η_p^2 = .01), physical fitness, F (2, 762) = 4.22, p < .05 (η_p^2 = .01), and

319   achievement motives, F (2, 762) = 4.85, p < .05 (η_p^2 = .01). Pairwise (post-hoc) comparison

320   data revealed that 5K runners were more motivated than 'full' and/or 'half' marathon runners

321   across all three motives. Gender significantly affected achievement motives, whereby males

322   scored higher on this factor, F (1, 762) = 22.07, p < .001 (η_p^2 = .02). Finally, Nationality had

323   a main effect on social motives, such that Indian respondents were more motivated in their

324   need for social motives than UK residents, F (1, 762) = 4.33, p < .05 (η_p^2 = .01).

325   ………………………..

326   Insert Table 3 here

327   ………………………..

328 ***Two-way interactions***

329 Several two-way interactions emerged (see *Figures* 2 to 4). There was a significant Event x

330 Gender interaction effect on self-esteem motives, $F(2, 762) = 3.46$, $p < .05$ ($\eta_p^2 = .01$).

331 *Figure* 1 shows that self-esteem differences across event types were significantly more

332 noticeable amongst *males*, with 5K runners reporting a markedly stronger need for self-

333 esteem incentives compared to 'half' and 'full' marathon runners. There was also a

334 significant Event x Gender interaction effect on achievement motivation, $F(2, 762) = 4.44$, *p*

335 $< .05$ ($\eta_p^2 = .01$). *Figure* 2 indicates the effect of event type on achievement motivation was

336 much more dramatic amongst *males*, with 5K runners showing much stronger levels of a

337 need for achievement motivation compared to other event groups. Finally, we observed a

338 significant Nationality x Gender interaction effect on achievement motivation, $F(1, 762) =$

339 16.49, $p < .001$ ($\eta_p^2 = .02$). *Figure* 3 illustrates this interaction. Compared with their male

340 Indian counterparts, male UK residents reported stronger achievement motivation. By

341 contrast UK females had weaker achievement motivation compared to Indian females. Three-

342 way interactions are not reported here, due to ambiguity in interpretation.

343   ………………………..

344   Insert Figure 2 here

345   ………………………..

346   ………………………..

347   Insert Figure 3 here

348   ………………………..

349   ………………………..

350   Insert Figure 4 here

351   …………………………..

352 *Covariates*

353 Multivariate analysis revealed significant effects for age (Pillai's Trace = 0.06, F (5, 758) =

354 10.99, $p < 0.001$, $\eta_p^2 = 0.06$). The eta-squared effect size (η_p^2) depicts a 'medium' effect.

355 Univariate effects showed that age was negatively associated with social motives, F (1, 762)

356 = 4.19, $p < .05$ ($\eta_p^2 = .01$), and achievement motives, F (1, 762) = 23.90, $p < .001$ ($\eta_p^2 = .03$).

357

358 **Discussion**

359 Findings revealed that younger participants were motivated by the need for self-esteem,

360 physical fitness and achievement motives. This finding is consistent with previous research,

361 in that Ogles and Masters (2000) also found motive differences between differing ages of

362 runners. They found that younger athletes were more motivated by personal goal

363 achievement, whereas older athletes were motivated by general health orientation, weight

364 concern, life meaning and affiliation with other runners.

365

366 5K runners scored higher than half and full marathon runners on scores of self-esteem,

367 achievement motivations and physical fitness. Similar results have been found in previous

368 research on 5K races by Bell and Stephenson (2014) who used the Theory of Reasoned

369 Action (Fishbein & Ajzen, 2010) to investigate 5K runner motives. Within their adapted

370 conceptual framework, they identified four motivation themes, which were competition,

371 health, altruism and social affiliation. From a SDT perspective (Deci & Ryan, 2000)

372 competition refers to intrinsic drive to triumph over others and achieve a previously set goal,

373 which fits with the concepts of achievement motives and desire for physical fitness (a need

374 for competence). Health fits with physical fitness motives and self-esteem (a need for

15

375   autonomy), and social affiliation fits with the need for social motives within this study (a

376   need for relatedness). The current study, however, did not take into consideration altruism,

377   which Bell and Stephenson (2014) identify as important to consider within a 5K, due to the

378   charitable nature of many of these events. Bell and Stephenson (2014) found that high and

379   medium ability runners were more motivated by achievement motives in comparison to lower

380   ability runners who were focussed on health and social affiliation. Although altruism was a

381   significant factor in all ability runners, we did not test for it in the current study and therefore

382   cannot make comparisons. While this study did not account for the ability level of 5K

383   runners, if we were to relate to Bell and Stephenson's findings, it could be assumed that the

384   majority of these runners may be high to intermediate in ability as social affiliation was not a

385   predominant motive for these runners.

386

387   Males scored significantly higher than females within the need for achievement motive, this

388   was especially evident with the UK population. Achievement motives are related to

389   competition and goal achievement (Ogles & Masters, & Richardson, 1995) and this 'male

390   motive' has also been found in very early research regarding gender differences and sport

391   participation, which suggested that men are expected to be more competitive than females

392   (Bem, 1974, 1981). This finding was further supported by Koivula (1999) who also found

393   that men rated competition as a more important mode for participation than women. Males

394   running the 5K were also found to have a higher achievement motive than males competing

395   in other events. Ogles, Masters and Richardson (1995) also compared male and female

396   runners in a variety of different running events (marathon, half-marathon, 5K and 10K). They

397   also found gender differences in that women reported a higher range of motives including

398   weight concerns, social affiliation, self-esteem, life meaning and psychological coping.

399

400   This difference between males and females was also found to be conflicting depending on the

401   nationality of the participant. Within the UK, 5K male runners scored higher on the need for

402   self-esteem, whereas within the Indian sample 5K female runners scored higher on the need

403   for self-esteem motive. This slightly contradicts the research by Ogles et al., (1995), given

404   that male runners in our study scored high on self-esteem. However, the participants with

405   Ogles et al., (1995) were students from Stockholm University of the Royal Institute of

406   Technology, and therefore nationality and cultural differences could have been of influence.

407   Interestingly, when looking into previous work (e.g. Havenar & Lochbaum, 2007; Ogles &

408   Masters, 2000; Zach et al., 2017), it is difficult to identify the exact nationality of the

409   participants within these studies. Assumptions can be made surrounding the institutional

410   affiliations of the authors, however, this level of detail is lacking within their methods.

411   Furthermore, the participants within these studies, are not all from one particular marathon

412   event. Therefore, our current study has potentially unearthed an important limitation in

413   previous research. Within this study significant differences have been found between gender

414   and nationality and this needs to be further investigated in future research.

415

416   Further evidence of international differences was found, in that the Indian sample scored

417   higher than the UK sample on the need for social motives. Although, research specifically

418   looking at motives in relation to marathon running lacks cross-cultural and international

419   comparisons, previous research has investigated other forms of motivational differences

420   across countries. For example, Li, Harmer, Chi and Vongjaturapat (1996) found that when

421   comparing task and ego motives in sport between United States, Taiwan and Thailand

422   samples, the United States samples scored highest on task and ego orientation. More recently,

423   Asghar, Wang, Line and Alfermann (2013), found differences between Asian and German

424   athletes, in terms of their goal orientation, physical self-concept and competitive anxiety.

425   Asian athletes reported higher ego and lower task-orientation and higher cognitive anxiety

426   than German athletes. Asghar et al., (2013) categorised these two cultures as either

427   individualistic countries (Germany) or collectivist countries (China and Pakistan).

428   Individualism is a world view that prioritises the personal goals, one's uniqueness and

429   control, and puts the social to the periphery (Triandis & Gelfand 1998). Whereas,

430   collectivism is a social way of being, orientated toward in-groups and emphasises social

431   relationships (Triandis & Gelfand 1998). Asghar et al., (2013) identified differences between

432   these individualist and collectivist cultures in relation to competitive sport. The findings from

433   this study, may be the first to contribute to this work in regard to motivations for marathon

434   and event running. Our findings demonstrate that the Indian sample may lean towards a more

435   collectivist culture, with higher scores on their need for social affiliation compared to

436   participants from a more individualist culture such as the UK. Future research should take

437   this into account when investigating motives for marathon (and other distances) running.

438

439   It is important to acknowledge a number of study limitations. Firstly, based on constraints

440   associated with survey completion and given that this survey was part of a wider project, the

441   researchers felt the need to reduce the survey to 21 items. This was justified based on Revilla

442   & Ochoa (2017) recommendations, that a survey should take around 10 minute to complete.

443   Although our factorial model provided a better fit to the data, compared with the original

444   modified MOMS, the goodness-of-fit metrics (e.g., RMSEA) were moderate at best, and we

445   would recommend that future study designs include all 56 items. Additional research is also

446   needed to improve the goodness-of-fit indices for the shorter 21-item version. In addition,

447   future research may wish to consider Zach et al (2017) who have since added additional

448   constructs to this survey. Secondly, for this study we did not take into account participants

449   previous running experience, both in terms of previous competition (running events) and

450   training experience (degree of preparation), which may have implications for their motives to

451   engage. Although previous research has compared the motivations of 5K with marathon

452   runners (Shipway & Holloway, 2010), these runners had been running for a minimum of 5

453   years, therefore characterised as 'serious leisure' participants. Knowing the experience level

454   of participants could therefore provide greater insights between runner ability (competence)

455   and motivations. Nevertheless, this study has progressed our knowledge and highlighted

456   differences between event distances and cultural motives. However, future research may

457   benefit from a mixed methods approach to understand quantitative differences in addition to a

458   more qualitative approach to better understanding runners' experiences of such events.

459

460   Although previous research has provided evidence for motivational differences within

461   participants of different gender and age within running events (Ogles, Masters, &

462   Richardson, 1995; Ogles & Masters, 2000), this research is relatively scarce, and to date, no

463   research has considered this within one running event that covers three separate distances.

464   Furthermore, to date, no research has considered the motivational cultural differences that

465   may occur when engaging in running events, across various distances. Differences between

466   runners from different countries are clearly evident within this study. Such insights can be

467   used to better understand how to approach the design of mass running events in different

468   countries or cultural contexts. This in turn will allow for governments and organisers to tailor

469   their events specifically to their targeted population. Finally, adopting quantitative methods

470   are effective for analysing large sample size cohorts to understand the 'general' population,

471   however future research could adopt a mixed methods approach where both mass

472   participation samples are included alongside qualitative lived experiences of those engaging

473   in such running events (e.g. Hockey & Collinson, 2016). This to gain a wider perspective of

474   participant experiences of mass participant running events.

475

476 **References**

477 Allender, S., Cowburn, G., & Foster, C. (2006). Understanding participation in sport and

478 physical activity among children and adults: a review of qualitative studies. *Health education*

479 *research*, *21*(6), 826-835.

480

481 Allison D. (2010). The unstoppable 21st-century marathon boom. *Marathon & Beyond*,

482 14(5): 80-92.

483

484 Asghar E, Wang X, Linde K, & Alfermann D. (2013). Comparisons between Asian and

485 German male adolescent athletes on goal orientation, physical self-concept, and competitive

486 anxiety. *International Journal of Sport and Exercise Psychology,* 11; 229-243.

487

488 Bell N, & Stephenson AL. (2014). Variation in motivations by running ability: using the

489 theory of reasoned action to predict attitudes about running 5K races. *Journal of Policy*

490 *Research in Tourism, Leisure and Events*, 6:231-247, DOI: 10.1080/19407963.2014.933227

491

492 Bem, S. Measurement of psychological androgyny. (1974). *Journal of Consulting and*

493 *Clinical Psychology*, 42:155-162.

494

495 Bem, S. (1982). Gender schema theory: A cognitive account of sex typing. *Psychological*

496 *Review,* 88;354-364.

497

498 Buning, R. J., & Walker, M. (2016). Differentiating mass participant sport event consumers:

499 traditional versus non-traditional events. *Sport Marketing Quarterly, 25*(1), 47.

500

501

502   Carmack, M. A., & Martens, R. (1979). Measuring commitment to running: A survey of

503   runners' attitudes and mental states. *Journal of sport psychology*, *1*(1), 25-42.

504

505   Cejka N, Rust CA, Lepers R, Onywera TR, & Knechtle B. (2014). Participation and

506   performance trends in 100-km ultra-marathons worldwide. *Journal of Sport Sciences*, 32:354-

507   366.

508   Crandall, R. (1980). Motivations for leisure. *Journal of leisure research*, *12*(1), 45-54.

509   Deci EL, Ryan RM. (1985). *Intrinsic motivation and self-determination in human behaviour*.

510   New York, NY: Plenum.

511

512   Deci, E. L., & Ryan, R. M. (2000). The "What" and "Why" of Goal Pursuits: Human Needs

513   and the Self-Determination of Behaviour. Psychological Inquiry, 11(4), 227-268.

514   doi:10.1207/s15327965PLI1104_01

515

516   Fishbein M, & Ajzen I. (2010). *Predicting and changing behavior: The reasoned action*

517   *approach*. New York: Psychology Press.

518

519   Frederick CM, & Ryan RM. (1995). Self-determination in sport: a review using Cognitive

520   Evaluation Theory. *International Journal of Sport Psychology*, 26:5-23.

521

522   Funk, D., Jordan, J., Ridinger, L., & Kaplanidou, K. (2011). Capacity of mass participant

523   sport events for the development of activity commitment and future exercise intention.

524   *Leisure Sciences, 33*(3), 250-268.

525

526   Goodsell, T. L., Harris, B. D., & Bailey, B. W. (2013). Family status and motivations to run:

527   A qualitative study of marathon runners. *Leisure sciences*, *35*(4), 337-352.

528

529   Hagger M, & Chatzisarantis N. (2007). Self-determination Theory and the psychology of

530   exercise. *International Review of Sport and Exercise Psychology*, 1:79-103.

531

532   Hanson N, Madaras L, Dicke J, & Buckworth J. (2015). Motivational Differences between

533   Half, Full and Ultramarathoners. *Journal of Sport behaviour*, 38:180-191.

534

535   Havenar J, & Lochbaum M. (2007). Differences in participation motives of first-time

536   marathon finishers and pre-race dropouts. *Journal of Sport Behaviour*, 30:270–279.

537

538   Hockey, J and Allen-Collinson, J (2016). Digging in: The sociological phenomenology of

539   'doing endurance' in distance-running, in W Bridel, P Markula and J Denison (eds),

540   *Endurance Running: A Socio-Cultural Examination.* London: Routledge, pp 227-242.

541

542   Hu, L. T., & Bentler, P. M. (1999). Cut off criteria for fit indexes in covariance structure

543   analysis: Conventional criteria versus new alternatives. *Structural equation modeling: a*

544   *multidisciplinary journal*, 6(1), 1-55.

545

546   Knechtle, B., Rüst, C. A., & Rosemann, T. (2013). The aspect of nationality in participation

547   and performance in ultra-marathon running-A comparison between 'Badwater'and

548   'Spartathlon'. *OA Sports Med*, *1*(1), 1.

549

550   Koivula N. (1999). Sport Participation: Difference in Motivation and Actual Participation

551   Due to Gender Typing. *Journal of Sport Behaviour*, 22(3):360-380.

552

553   Leedy GM. (2000). Comnlitment to distance running: coping mechanism or addiction.

554   *Journal of Sport Behavior*, 23:255-270.

555

556   Lenherr, R., Knechtle, B., Rüst, C., Rosemann, T., & Lepers, R. (2012). From Double Iron to

557   Double Deca Iron ultra-triathlon-a retrospective data analysis from 1985 to 2011. *Physical*

558   *Culture and Sport. Studies and Research*, *54*(1), 55-67.

559

560   Li F, Harmer P, Chi L, & Vongjaturapat N. (1996). Cross-cultural validation of the Task and

561   Ego Orientation in Sport Questionnaire. *Journal of Sport Exercise Psychology*, 18:392–407.

562

563   Masters KS, Ogle's BM, Jolton AJ. (1993). The development of an instrument to measure

564   motivation for marathon running: the motivations of marathoners scales (MOMS). *Research*

565   *Quarterly for Exercise and Sport*, 64:134–43.

566

567   Ogles BM, & Masters KS. (2000). Older versus younger adult male marathon runners:

568   Participative motives and training habits. *Journal of Sport Behaviour*, 23:1-14.

569

570   Ogles B, Masters KS, & Richardson SA. (1995). Obligatory Running and Gender: An

571   Analysis of Participative Motives and Training Habits. *International Journal of Sport*

572   *Psychology,* 26:233-248.

573

574   Park Run. (2019). Historical chart of number of parkrun event, parkrunners and volunteers.

575   Retrieved from: www.parkrun.org.uk/results/historicalchart/

576

577   Revilla, M., & Ochoa, C. (2017). Ideal and maximum length for a web survey. *International*

578   *Journal of Market Research*, 59(5), 557-565.

579

580   Ridinger L, Funk D, Jordan J, & Kaplanidou K. (2012). Marathons for the Masses: Exploring

581   the Role of Negotiation-Efficacy and Involvement on Running Commitment. *Journal of*

582   *Leisure Research*, 44:155-178.

583

584   Ryan RM, & Deci EL. (2000). Self-determination theory and the facilitation of intrinsic

585   motivation, social development, and well-being. *American Psychologist*, 55:68–78.

586

587   Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in*

588   *motivation, development, and wellness*. Guilford Publications.

589

590   Ryan, R. M., Frederick, C. M., Lepes, D. D., Rubio, N. N., & Sheldon, K. M. (1997).

591   Intrinsic motivation and exercise participation. *International Journal of Sport Psychology*,

592   *28*(4), 335-354.

593

594   Shipway, R., & Holloway, I. (2010). Running free: Embracing a healthy lifestyle through

595   distance running. *Perspectives in public health*, 130(6), 270-276.

596

597   Stebbins RA. (1992). *Amateurs, professionals, and serious leisure*. Montreal: McGillQueen's

598   University Press.

599

600   Triandis HC, & Gelfand MJ. (1998). Converging measurement of horizontal and vertical

601   individualism and collectivism. *Journal of Personality and Social Psychology*, 74:118–128.

602

603   Wilber, R. L., & Pitsiladis, Y. P. (2012). Kenyan and Ethiopian distance runners: what makes

604   them so good?. *International journal of sports physiology and performance*, 7(2), 92-102.

605

606   Zach S, Xia Y, Zeev A, Arnon M, Choresh N, & Tenenbaum G. (2017). Motivation

607   dimensions for running a marathon: A new model emerging from the Motivation of Marathon

608   Scale (MOMS). *Journal of Sport and Health Science*, 6(3):302-310.

609

610   Ziegler SG. (1991). Perceived benefits of marathon running in males and females. *Sex Roles*,

611   25:119-127.

612

613

614

615

616

617