NHS Fitness Research Report

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Study Background

Couch to 5k is an NHS-sponsored fitness program lasting 9 weeks. This project will be analyzing a small study of 121 people in 2 cities (Edinburgh and Glasgow), all of whom started the Couch to 5k program across the course of a year. This study aims to discuss the program's effect on psychological well-being, as well as the psychological factors that made people continue on the program.

Method

At Week 0, all participants completed a questionnaire measuring the psychometric factors of accountability and self-motivation.Upon either completing the program (Week 9) or dropping out (< Week 9), participants completed a questionnaire which included a measure of their self-reported happiness, and a "health" measure derived from a number of physiological tests. Researchers also recorded the season in which participants started the program, as evidence from previous research suggests that the probability of completing the couch to 5k program varies substantially across the year.

Data Description

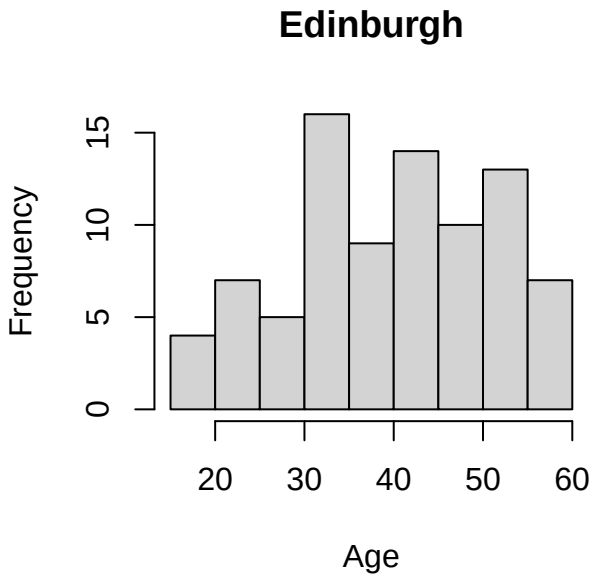
121 participants were recruited to take part in the study. 2 participants recorded ages exceeding 100, 2 participants recorded an impossible score on the self-motivation scale, and a further one participant recorded having stopped the program 3 weeks after the defined maximum. These 5 participants were excluded from all analyses.

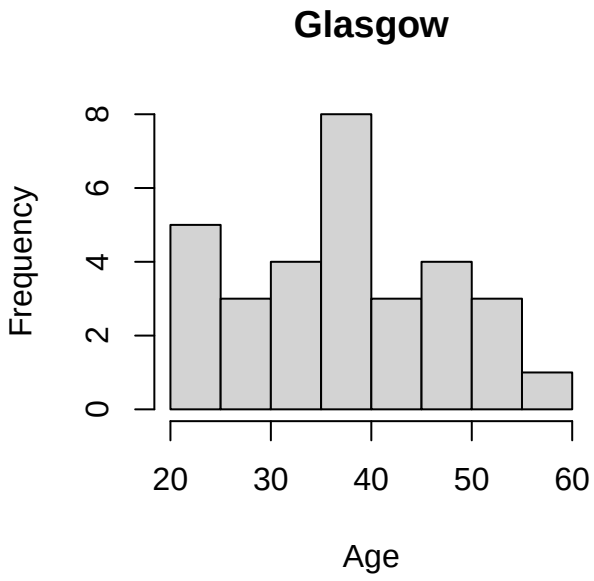
The remaining 116 participants were all over 18 (Mean age 40, SD 11.3) and were recruited from Edinburgh (73%) and Glasgow (27%). The median number of weeks spent in the 'couch-to-5k' program was 8.5, with 50% successfully completing the 9 weeks. Spring and summer were the most common seasons for attempting the program (56% and 30% of participants respectively), with 8% undertaking it in autumn and only 6% in winter.

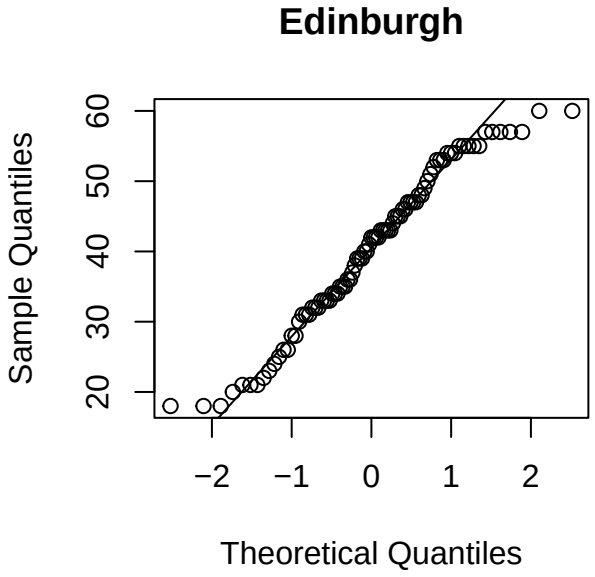
City Differences

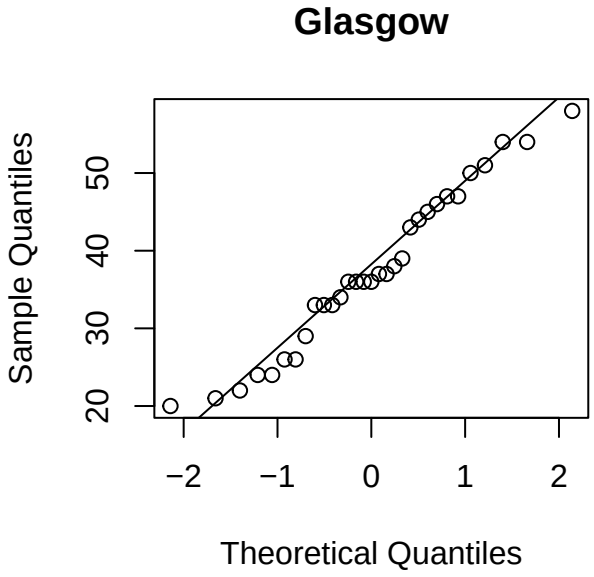
A X^2 test of independence indicated that rate of attrition (early-/late-/no- dropout) did not significantly differ between Edinburgh and Glasgow (X^2(n=116) = 0.299). From both cities, approximately half of participants did not drop out of the program. Late drop-outs made up 13% of Glasgow participants and 9% of those from Edinburgh, with the remainder dropping out early (39% of Glasgow, 40% of Edinburgh).

The mean age of participants was not significantly different between the two cities (t(114)=1.22,p=0.22), with a mean age in Edinburgh of 40.3 and in Glasgow of 37.4.









Happiness and Health

To investigate the extent to which (over seasonal and age related differences) happiness ratings are associated with getting further through (and feeling healthier following) the couch-to-5k program, happiness ratings on a scale of 0 to 100 were modeled using multiple regression.

The number of weeks at which participants stopped (1-9), a multi-test measure of health (Z-scored) and their interaction were included as predictors, along with the covariates of age (years) and season (treatment coded with spring as the reference level). The regression model appeared to meet all assumptions, with residuals displaying a constant mean at approximately zero, although the boundaries of the happiness scale induced

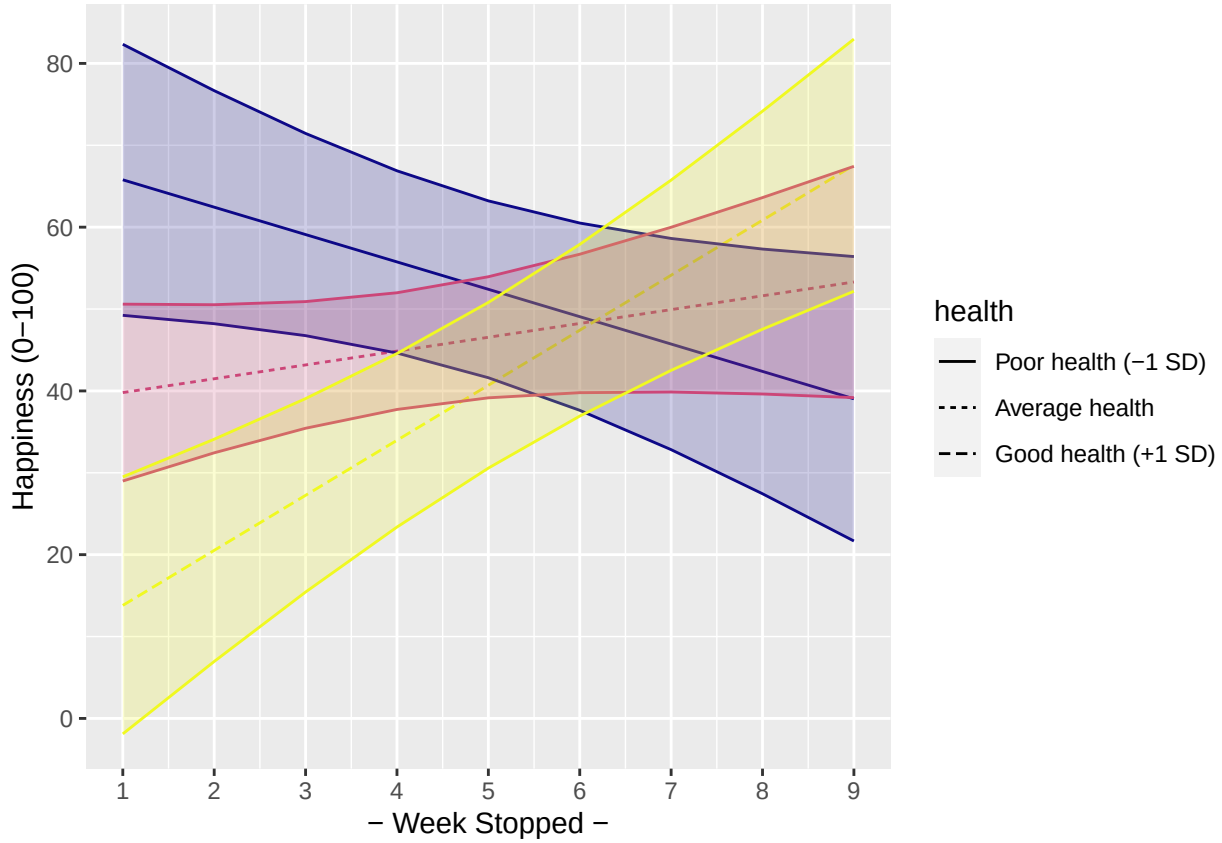
a smaller residual variance at the tail ends of the fitted values. This is corroborated by 30% of participants reporting happiness in either the bottom or top 10th of the scale.

Analysis of variance indicated that after accounting for season and age, there was a significant interaction between participants' self-reported health at the end of the program and the week at which they stopped ($F(1,108)=30.69, p<0.001$).The full model explained approximately 24% (adjusted R^2) of the variance in happiness scores.

For those of average health, there was no statistically reliable change in happiness associated with additional weeks of the couch-to-5k program ($b=1.69, B=0.16, t(108)=1.32, p=0.191$).

However this effect was moderated by health such that the weekly change in happiness was more positive for healthier, and more negative for less healthy, people. For each 1SD (10 raw points) change in health from the average, happiness ratings changed by an additional 5.03 points every week ($b,5.03, B=0.48, t(108)=5.54, p<0.001$). The graph below shows the shape of this interaction.

Happiness following the couch-to-5k program was found to be related to how far through the program participants got, and this relationship depended on participant health, with the happiness of healthier participants increasing more for every week longer through the program they lasted than it did for participants of average health.



Predictors of Drop-Out

Couch-to-5k completion (completed vs dropped out) was modeled using a logistic regression, with the location (Glasgow, Edinburgh) and season in which participants undertake the program as predictors, along with participants age, and their scores on two psychometric measures of accountability and self-motivation that were administered prior to participants starting the program. A likelihood ratio test indicated that the inclusion of these two measures (accountability and self-motivation) collectively improves model fit over and

above age, location and season (X^2(2)=7.78,p=0.02). All deviance residuals for the full model were less than 3 in magnitude.

In keeping with previous research, completion of the program was found to differ between seasons, with participants undertaking the program in both summer and autumn being associated with increased odds of program completion (OR: 35.73,95% CI[10.89,149.2] and 37.23[5.2,792.8] respectively). Age and city were not found to significantly predict completion.

While completing the program was not significantly associated with scores on the accountability measure, a relationship was found between self motivation and program completion; a 1 standard deviation increase in self-motivation was associated with doubling the odds of finishing the entire 9-weeks (OR: 2.08[1.23,3.7]). The model-predicted probabilities of program completion across values of the two psychometric measures are visualized below.

The present study indicated that the psychometric factors of accountability and self motivation, taken together, were useful in predicting the completion (vs drop out) of the couch-to-5k program. Specifically, a strong association was found between self-motivation and program completion, with more motivated participants have a higher probability of finishing the full 9 weeks.