P8158 - Final Project
Effects of Athletic Identity and Resilience on Emotional Well-being during COVID-19

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Motivation

- The onset of COVID-19 affected almost every sphere of work and leisure.
- We are interested in investigating the impact one's athletic identity may have on mental well-being, particularly as the context of a global pandemic may have dramatically impacted one's experience of playing a sport/being an athlete.

Resilience, Healthy Lifestyle, and Mental Health

- Resilience and health lifestyle are both characteristics that are associated with mental well-being (both of which increase positive indicators of mental health and decrease negative indicators of mental health)
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Methodology

1. Conduct EFA and CFA to determine which observed variables underlie our latent variables of interest.
2. Evaluate reliability of the determined latent structures with Chronbach's alpha.
3. Construct SEM(s) to quantify the relationship between our constructed latent variables and mental health score.

Data: Athlete Mental Healthy Survey

Several surveys administered including in the UK after their first COVID-19 lockdown including:

- Athletic Identity Scale (AIMS)
- The Brief Resilience Scale
- Mental Health Continuum Short Form (MHC-SF)

In total, 753 individuals were interviewed – we will focus our analysis on the 363 athletes represented in this study.

Latent Variable 1: Athletic Identity

First Order Factors	AIMS Items
Social identity	
AIMS 1	I consider myself an athlete. CNSDR_ATH
AIMS 2	I have many goals related to sport. SPRT_GOALS
AIMS 3	Most of my friends are athletes. FRNDS_ATH
Exclusivity	
AIMS 4	Sport is the most important part of my life. SPRT_IMPT
AIMS 5	I spend more time thinking about sport than anything else. THINK_SPRT
Negative affectivity	
AIMS 6	I feel bad about myself when I do poorly in sport. BAD_SPRT
AIMS 7	I would be very depressed if I were injured and could not compete in sport. DPRS_SPRT

Note: Participants respond to the 7-items of the Athletic Identity Measurement Scale (AIMS) on a Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Athletic Identity Scale (AIMS)

Latent Variable 1 (Athletic Identity): EFA

Parallel component analysis recommends 2 components.

From the EFA, we first propose that there are three latent variables underlying the AIMS variables, structured as follows:

- `external_identity` (comprised of `sprt_goals`, `cnsdr_ath`, `frnds_ath`)
- `internal_value` (comprised of `sprt_impt`, `think_sprt`)
- `negative_events` (comprised of `dprs_sprt`, `bad_sprt`)

Latent Variable 1 (Athletic Identity): Reliability

Chronbach's alpha were reasonable for `internal_value` and `negative_events` (0.81 and 0.63, respectively), with no variables indicated that could be dropped to improve reliability.

However, for `external_identity`:

```
 lower alpha upper     95% confidence bc
0.59 0.65 0.72

 Reliability if an item is dropped:
           raw_alpha std.alpha G6(smc) a
cnsdr_ath       0.47      0.49    0.33
sprt_goals      0.46      0.47    0.31
frnds_ath       0.75      0.76    0.61
```

Since Chronbach's alpha would improve significantly if `frnds_ath` is removed, we decided to remove this variable from the `athlete_identity` latent structure.

Latent Variable 1 (Athletic Identity): CFA

Latent Variables:

	Estimate	Std.Err	z-value	P(>|z|)
external_identity =~				
sprt_goals	0.677	0.073	9.247	0.000
cnsdr_ath	0.584	0.056	10.404	0.000
internal_value =~				
sprt_impt	0.627	0.109	5.728	0.000
think_sprt	0.840	0.166	5.077	0.000
negative_events =~				
dprs_sprt	0.625	0.078	8.053	0.000
bad_sprt	0.799	0.103	7.777	0.000
athlete_identity =~				
external_dntty	0.809	0.143	5.658	0.000
internal_value	1.396	0.374	3.729	0.000
negative_evnts	0.813	0.152	5.364	0.000

Both the first- and second- order latent variables report significant loadings. As fit statistics are also adequate (CFA > 0.99, RMSEA < 0.05, $\chi^2 = 0.514$), we will proceed with this structure in our SEM.

Latent Variable 2: Resilience

Please respond to each item by marking one box per row		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
BRS 1	I tend to bounce back quickly after hard times BOUNCE	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
BRS 2	I have a hard time making it through stressful events. STRS_EVNT	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
BRS 3	It does not take me long to recover from a stressful event. STRS_RCVR	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
BRS 4	It is hard for me to snap back when something bad happens. SNAP_BACK	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
BRS 5	I usually come through difficult times with little trouble. DIFFICULT	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
BRS 6	I tend to take a long time to get over set-backs in my life. SETBACKS	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1

The Brief Resilience Scale

Latent Variable 2 (Resilience): PCA

Parallel component analysis recommended 1 component.

After running EFA on 1- and 2- factor models, we propose a one-factor model, as follows: - ‘

Latent Variable 3: Healthy Lifestyle

- Indicators of healthy lifestyle

1. Five Fruit and Vegetables: Yes/No

- Higher sum score indicates healthier lifestyle

Latent Variable 3: Healthy Lifestyle

- Indicators of healthy lifestyle

1. Five Fruit and Vegetables: Yes/No
2. Smoking Status: 7-point Likert scale

- Higher sum score indicates healthier lifestyle

Latent Variable 3: Healthy Lifestyle

- Indicators of healthy lifestyle

1. Five Fruit and Vegetables: Yes/No
2. Smoking Status: 7-point Likert scale
3. Hour Sleep: numerical variable

- Higher sum score indicates healthier lifestyle

Exploratory Analysis

- MHC-SF: The side-by-side boxplot of MHC-SF score between athletes and non-athletes shows that these two groups have approximately the same median/mean and distribution of MHC-SF score. Both distributions are left-skewed, with a couple of outliers in the negative direction.
- Resilience The side-by-side boxplot of resilience score between athletes and non-athletes shows that athletes have a slightly larger median/mean resilience score than non-athletes. Both distributions are left-skewed, with a couple of outliers in the negative direction.

Selected Variables

Outcome Variable: Well-Being Composite Score

- The Mental Health Continuum Short Form (MHC-SF)
- Assess three components of well-being – Emotional – Social – Psychological
- Higher scores indicate greater levels of positive well-being (scores range from 0 to 70)

Discussion

Resources

1. Hu, T., Zhang, D., & Wang, J. (2014, December 13). A meta-analysis of the Trait Resilience and Mental Health. Personality and Individual Differences. https://www.sciencedirect.com/science/article/pii/S0191886914006710
2. Dale, H., Brassington, L., & King, K. (2014, March 5). The impact of healthy lifestyle interventions on Mental Health and Wellbeing: A systematic review. Mental Health Review Journal. https://www.emerald.com/insight/content/doi/10.1108/MHRJ-05-2013-0016/full/html

2.https://www.tandfonline.com/doi/full/10.1080/10413200802415048
2.https://measure.whatworkswellbeing.org/measures-bank/brief-resilience-scale/
3.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7068432/#B17-ijerph-17-01265
4.https://www.hsph.harvard.edu/health-happiness/mental-health-continuum-short-form/
5.https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7147210/