

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

Waveley Qiu, Yihan Qiu, Yuanyuan Zeng

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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 healthy 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)
- ▶ We hypothesize that the effect that being a devoted athlete has on mental well-being would be mediated through these two characteristics, and will investigate the relationships between these variables as well.

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. <i>CNSDR-ATH</i> |
| AIMS 2 | I have many goals related to sport. <i>SPRT-GOALS</i> |
| AIMS 3 | Most of my friends are athletes. <i>FRNDS-ATH</i> |
| Exclusivity | |
| AIMS 4 | Sport is the most important part of my life. <i>SPRT-IMPT</i> |
| AIMS 5 | I spend more time thinking about sport than anything else. <i>THINK-SPRT</i> |
| Negative affectivity | |
| AIMS 6 | I feel bad about myself when I do poorly in sport. <i>BAD-SPRT</i> |
| AIMS 7 | I would be very depressed if I were injured and could not compete in sport. <i>DPRS-SPRT</i> |

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 |
|-------------------------|-----------|-----------|---------|---|
| <code>cnsdr_ath</code> | 0.47 | 0.49 | 0.33 | |
| <code>sprr_goals</code> | 0.46 | 0.47 | 0.31 | |
| <code>frnds_ath</code> | 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 |

Fit statistics: CFI > 0.99, RMSEA < 0.05, $\chi^2 = 0.514$

Latent Variable 2: Resilience

| Please respond to each item by marking <u>one box per row</u> | | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree |
|---------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| BRS 1 | I tend to bounce back quickly after hard times <i>BOUNCE</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| BRS 2 | I have a hard time making it through stressful events. <i>STRS-EVNT</i> | <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 |
| BRS 3 | It does not take me long to recover from a stressful event. <i>STRS-RCVR</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| BRS 4 | It is hard for me to snap back when something bad happens. <i>SNAP-BACK</i> | <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 |
| BRS 5 | I usually come through difficult times with little trouble. <i>DIFFICULT</i> | <input type="checkbox"/> 1 | <input type="checkbox"/> 2 | <input type="checkbox"/> 3 | <input type="checkbox"/> 4 | <input type="checkbox"/> 5 |
| BRS 6 | I tend to take a long time to get over set-backs in my life. <i>SETBACKS</i> | <input type="checkbox"/> 5 | <input type="checkbox"/> 4 | <input type="checkbox"/> 3 | <input type="checkbox"/> 2 | <input type="checkbox"/> 1 |

The Brief Resilience Scale

Latent Variable 2 (Resilience): EFA

Parallel component analysis recommended 1 component.

After running EFA on 1- and 2- factor models, we find that the one-factor model, containing all variables from the scale fits the best.

Latent Variable 2 (Resilience): Reliability

lower alpha upper 95% confidence bound
0.87 0.89 0.9

Reliability if an item is dropped:

| | raw_alpha | std.alpha | G6(smc) | average |
|-----------|-----------|-----------|---------|---------|
| bounce | 0.87 | 0.87 | 0.85 | |
| strs_evnt | 0.86 | 0.86 | 0.84 | |
| strs_rcvr | 0.87 | 0.87 | 0.85 | |
| snap_back | 0.86 | 0.86 | 0.84 | |
| difficult | 0.88 | 0.88 | 0.86 | |
| setbacks | 0.85 | 0.85 | 0.83 | |

Latent Variable 2 (Resilience): CFA

Latent Variables:

| | Estimate | Std.Err | z-value | P(> z) |
|---------------|----------|---------|---------|---------|
| resilience =~ | | | | |
| bounce | 0.662 | 0.045 | 14.732 | 0.000 |
| strs_evnt | 0.852 | 0.052 | 16.419 | 0.000 |
| strs_rcvr | 0.679 | 0.051 | 13.415 | 0.000 |
| snap_back | 0.814 | 0.048 | 17.031 | 0.000 |
| difficult | 0.644 | 0.051 | 12.559 | 0.000 |
| setbacks | 0.828 | 0.046 | 17.954 | 0.000 |

Fit statistics: CFI > 0.98, RMSEA < 0.08, $\chi^2 = 0.017$

Latent Variable 3: Healthy Lifestyle

We hypothesized that we could create a latent variable representing a healthy lifestyle using the following variables:

- ▶ `fruit_veg`: Five Fruit and Vegetables (Yes/No)
- ▶ `smoking`: Smoking Status (7-point Likert scale)
- ▶ `hr_sleep`: Hour Sleep (numeric variable)

Latent Variable 3 (Healthy Lifestyle): Reliability

| lower | alpha | upper | 95% conf |
|-------|-------|-------|----------|
| -0.47 | -0.26 | -0.04 | |

| | raw_alpha | std.alpha | G |
|-----------|-----------|-----------|---|
| hr_sleep | -0.112 | -0.150 | |
| smoking | 0.043 | 0.055 | |
| fruit_veg | -0.330 | -0.330 | |

Chronbach's alpha is very low for these variables, indicating that the variables `hr_sleep`, `smoking`, `fruit_veg` do not reliably measure the latent variable.

Since `healthy_lifestyle` is thus not reliably measured with these variables, we made the decision to exclude this latent variable from SEM analysis – treating this latent variable as a formative (rather than a reflective) construct might more accurately reflect its nature.

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/MH-RJ-05-2013-0016/full/html>
3. <https://www.tandfonline.com/doi/full/10.1080/10413200802415048>
4. <https://measure.whatworkswellbeing.org/measures-bank/brief-resilience-scale/>
5. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7068432/#B17-ijerph-17-01265>
6. <https://www.hsph.harvard.edu/health-happiness/mental->