P8158 - Must Athletes be Tough? Effects of Athletic Identity and Resilience on 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 athletic identity may have on athletes' overall 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 improved mental health.
- We hypothesize that the effect that being a devoted athlete has on overall well-being would be mediated through these two characteristics, and will endeavor to 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

The dataset we selected is from a study in which several surveys administered 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

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

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 (BRS)

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 bou
0.87 0.89 0.9

 Reliability if an item is dropped:
           raw_alpha std.alpha G6(smc) ave
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

 Reliability if an item is drop
           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.

Outcome Variable: Mental Health Continuum Short Form (MHC-SF)

During the past month, how often did you feel …	NEVER (0)	ONCE OR TWICE (1)	ABOUT ONCE A WEEK (2)	ABOUT 2 OR 3 TIMES A WEEK (3)	ALMOST EVERY DAY (4)	EVERY DAY (5)
1. happy						
2. interested in life						
3. satisfied						
4. that you had something important to contribute to society						
5. that you belonged to a community (like a social group, or your neighborhood)						
6. that our society is becoming a better place for people like you						

Mental Health Continuum Short Form (MHC-SF)

Outcome Variable: MHC-SF

Three components of well-being are assessed:

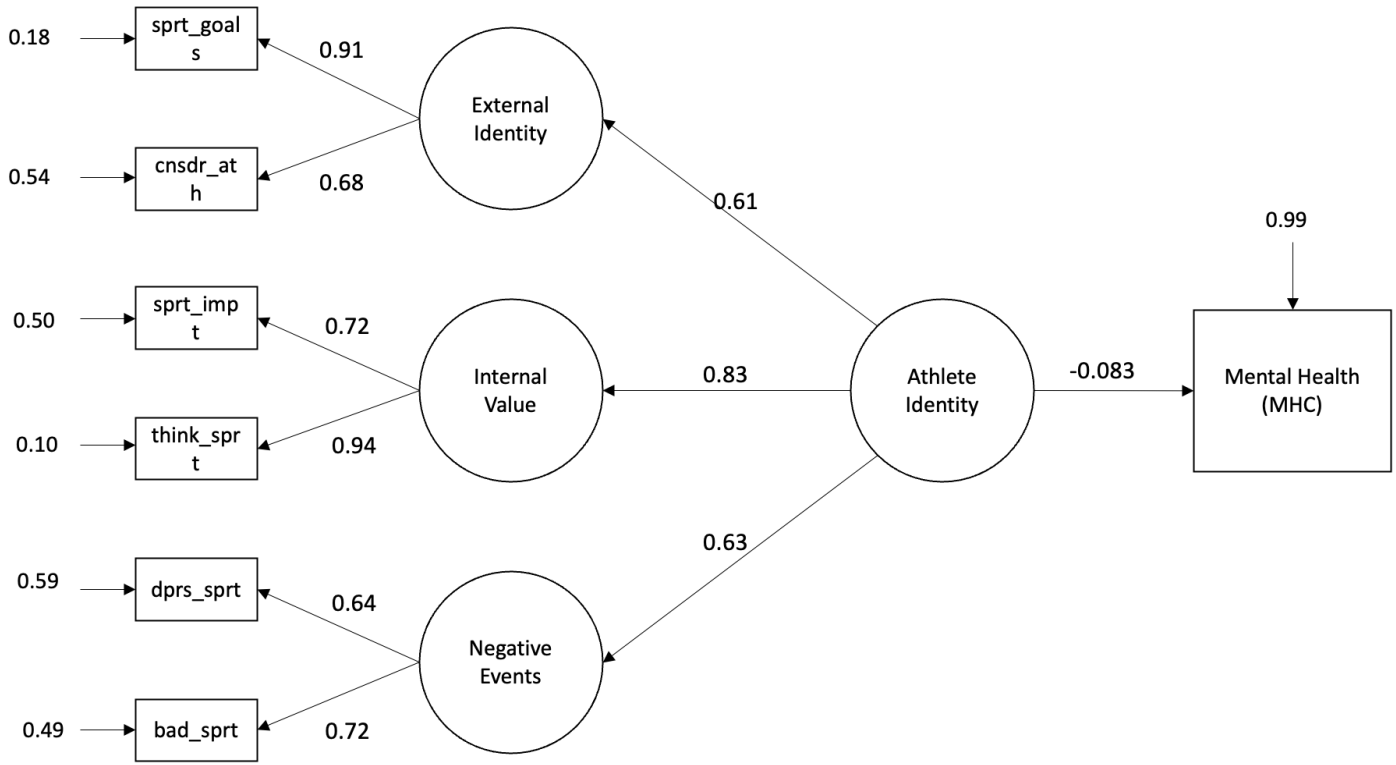
- Emotional
- Social
- Psychological

We will use the MHC-SF composite score (sum of all responses) as our outcome variable. Higher scores indicate greater levels of positive well-being.

SEM 1: Athletic Identity and MHC-SF

First, we constructed a SEM relating athletic identity to MHC-SF, without any mediating variable.

Model 1: Relationship between Athlete Identity and Mental Health (MHC) for Athletes



*Standardized Path Coefficients

SEM 1 (Athletic Identity and MHC-SF): Conclusion

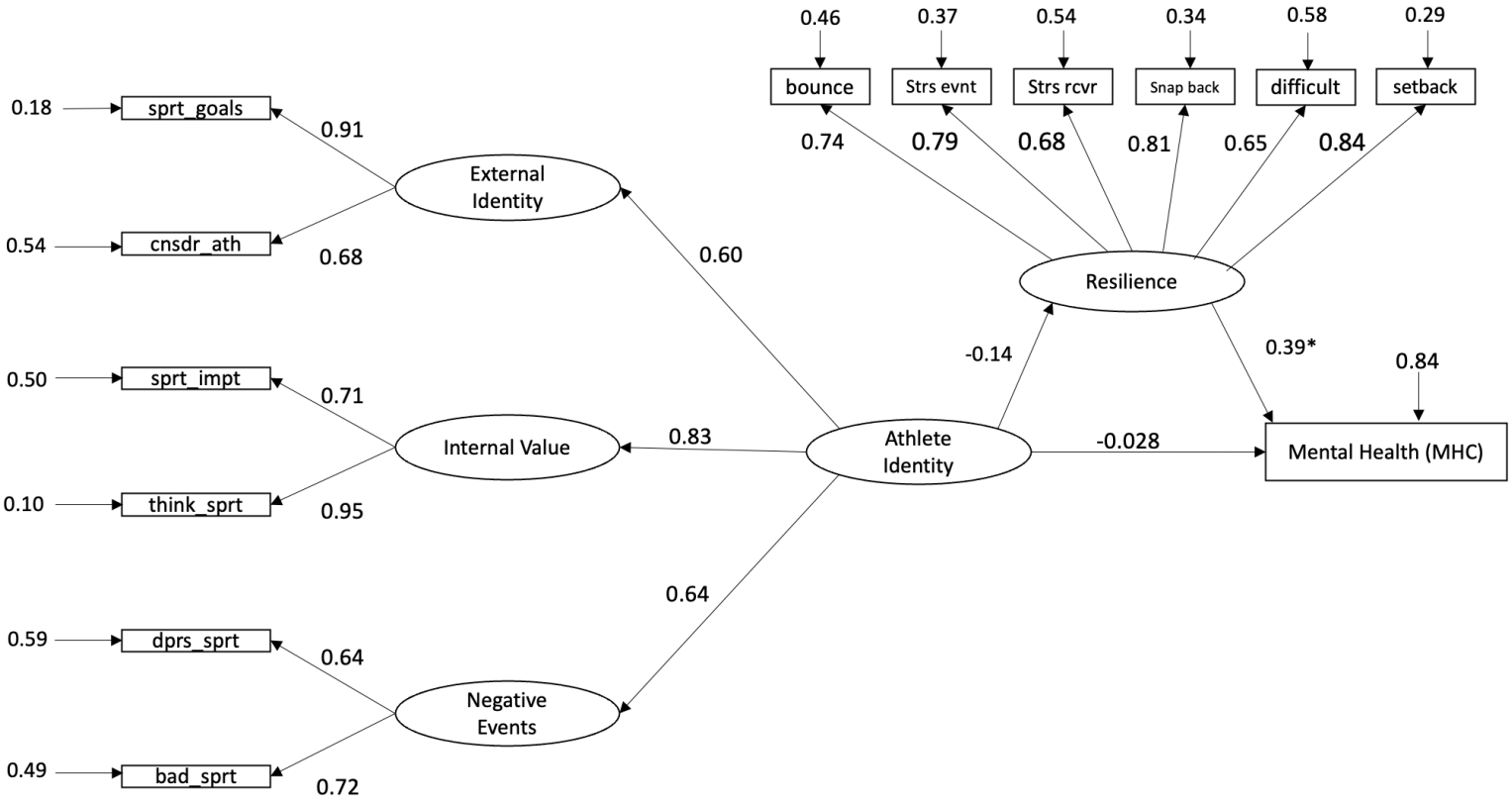
We found that though the estimated effect between athletic identity and MHC-SF is negative, indicating that a stronger athletic identity decreases overall well-being, the p-value associated with this value is 0.232.

Therefore, we conclude that there is **no** significant relationships between athletic identity and overall well-being

SEM 2: Resilience, Athletic Identity, and MHC-SF

We constructed another SEM to investigate the mediation effect of Resilience on causal relationship between athletic identity and MHC-SF.

Model 2: Relationship between Athlete Identity and Mental Health (MHC) Mediated by Resilience for Athletes



Standardized Path Coefficients
Note: Value with * is significant at 0.05

SEM 2 : Conclusion

We found that estimated effect between athletic identity and resilience is negative, indicating that stronger athletic identity increases resilience. Such effect is not significant.

The estimated effect between resilience and MHC-SF is positive, indicating that stronger resilience increases overall well-being. Such effect is significant at 0.05 significant level.

Defined Parameters:

	Estimate	Std.Err	z-value	P(>|z|)	Std.lv	Std.all
indrct_thlt_dn	-1.374	0.732	-1.877	0.061	-0.724	-0.056
ttl_thlt_dntty	-2.054	1.669	-1.231	0.218	-1.082	-0.084

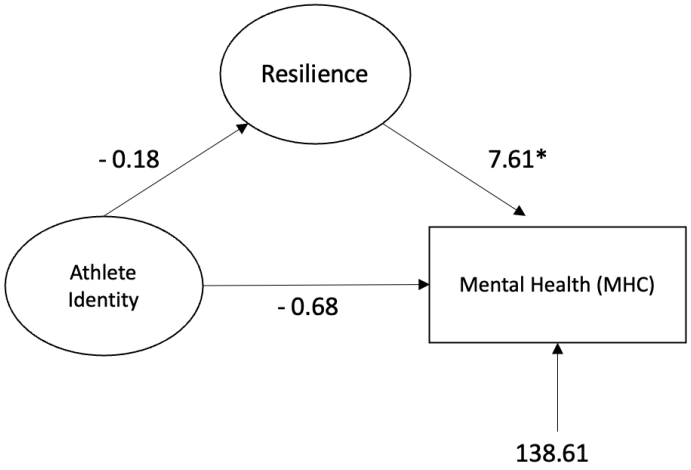
- Both direct and indirect effects are not significant

Comparison of Athletes and Non-athletes

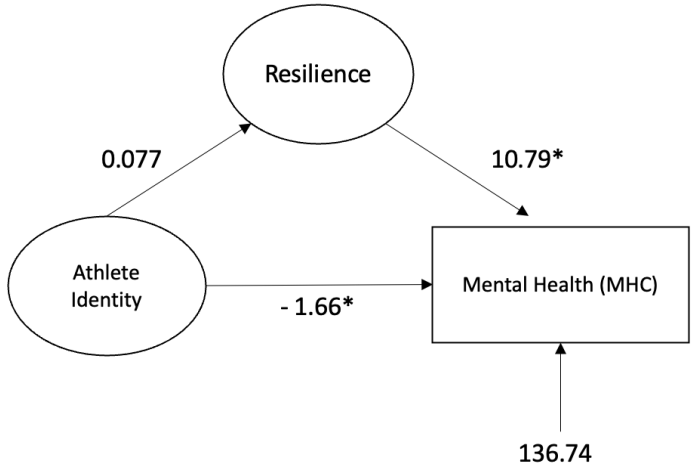
- We are interested in comparing mediation effects of resilience on relationship between athletic identity and MCH-SF within athlete group and non-athlete group

Comparison of Mediation Effect of Resilience on Relationship between Athlete Identity and Mental Health for Athletes and Non-Athletes

Athlete SEM with Unstandardized Coefficients



Non-Athlete SEM with Unstandardized Coefficients



Note: Value with * is significant at 0.05

Comparsion of SEM within Athletes and Non-athletes: Conclusion

- We found that the estimated effect between athletic identity and MHC-SF is stronger among non-athletes compared to athletes. Such effect is significant.
- Direct/Indirect effect of athletic identity among athletes

```
Defined Parameters:
                   Estimate  Std.Err  z-value  P(>|z|)
    indrct_thlt_dn   -1.374    0.732   -1.877    0.061
    ttl_thlt_dntty   -2.054    1.669   -1.231    0.218
```

- Direct/Indirect effect of athletic identity among non-athletes

```
Defined Parameters:
                   Estimate  Std.Err  z-value  P(>|z|)
    indrct_thlt_dn    0.833    0.545    1.527    0.127
    ttl_thlt_dntty   -0.824    0.866   -0.951    0.341
```

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
3. A cross-cultural psychometric evaluation of the Athletic Identity Measurement Scale. Taylor & Francis. (n.d.). https://www.tandfonline.com/doi/full/10.1080/10413200802415048
4. The brief resilience scale. Evaluating wellbeing. (2021, March 15). https://measure.whatworkswellbeing.org/measures-bank/brief-resilience-scale/

Resources

5. Fung S. F. (2020). Validity of the Brief Resilience Scale and Brief Resilient Coping Scale in a Chinese Sample. International journal of environmental research and public health, 17(4), 1265. https://doi.org/10.3390/ijerph17041265
6. Mental health continuum short form. Lee Kum Sheung Center for Health and Happiness. (2022, March 16). Retrieved May 3, 2022, from https://www.hsph.harvard.edu/health-happiness/mental-health-continuum-short-form/