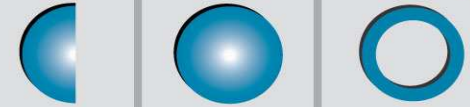


# Association between Health Behaviours and Religion/Spirituality in Adolescents

Gabriele Gäbler, Hermann Toplak, René Hefti, Josef Haas, Elisabeth Pail



# Background



- The prevalence of certain risk factors for chronic diseases is high among young people
  - E.g. smoking, alcohol abuse, low fruit and vegetable consumption, and lack of physical activity
- These lifestyle factors influence one another and are further affected by social and environmental factors

Ramelow D et al. WHO-HBSC-Survey 2010. Bundesministerium für Gesundheit (BMG). 2011;

Currie C. HBSC international report from the 2009/2010 survey. WHO Regional Office for Europe; 2012

Ludwig Boltzmann Institut. Kinder und Jugend. Gesundheitsbericht Kärnten. Amt der Kärntner Landesregierung; 2006

Hölling H, Schlack R. KiGGS. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. Juni 2007;50(5-6):794–9

Lampert T. KiGGS. Deutsches Arzteblatt international. April 2008;105(15):265–71.

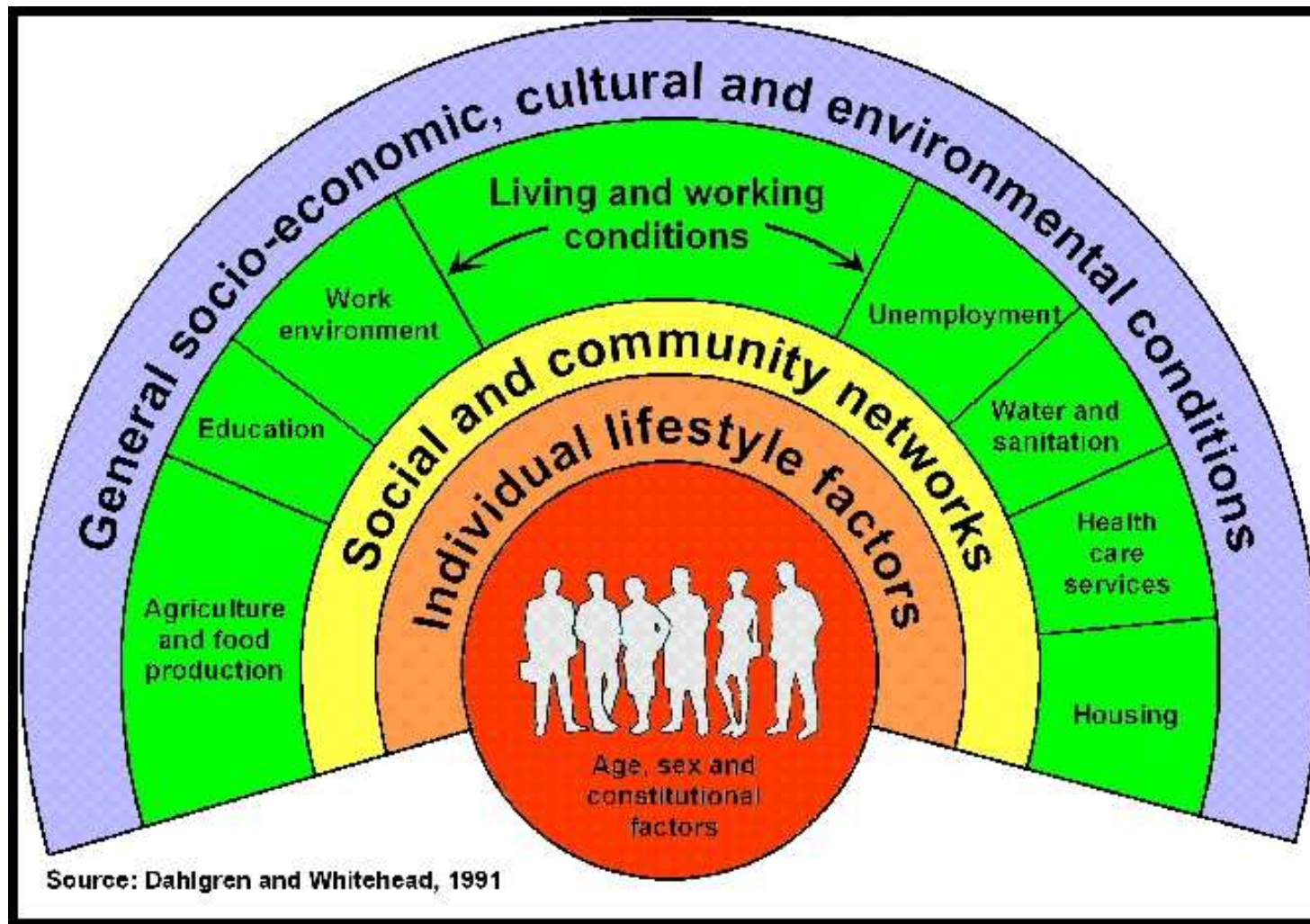
Lampert T et al. KiGGS. Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz. Juni 2007;50(5-6):634–42.

Quelle: [http://www.herzpraxis-nuernberg.de/pics/keyvisual\\_risikofaktoren.jpg](http://www.herzpraxis-nuernberg.de/pics/keyvisual_risikofaktoren.jpg)

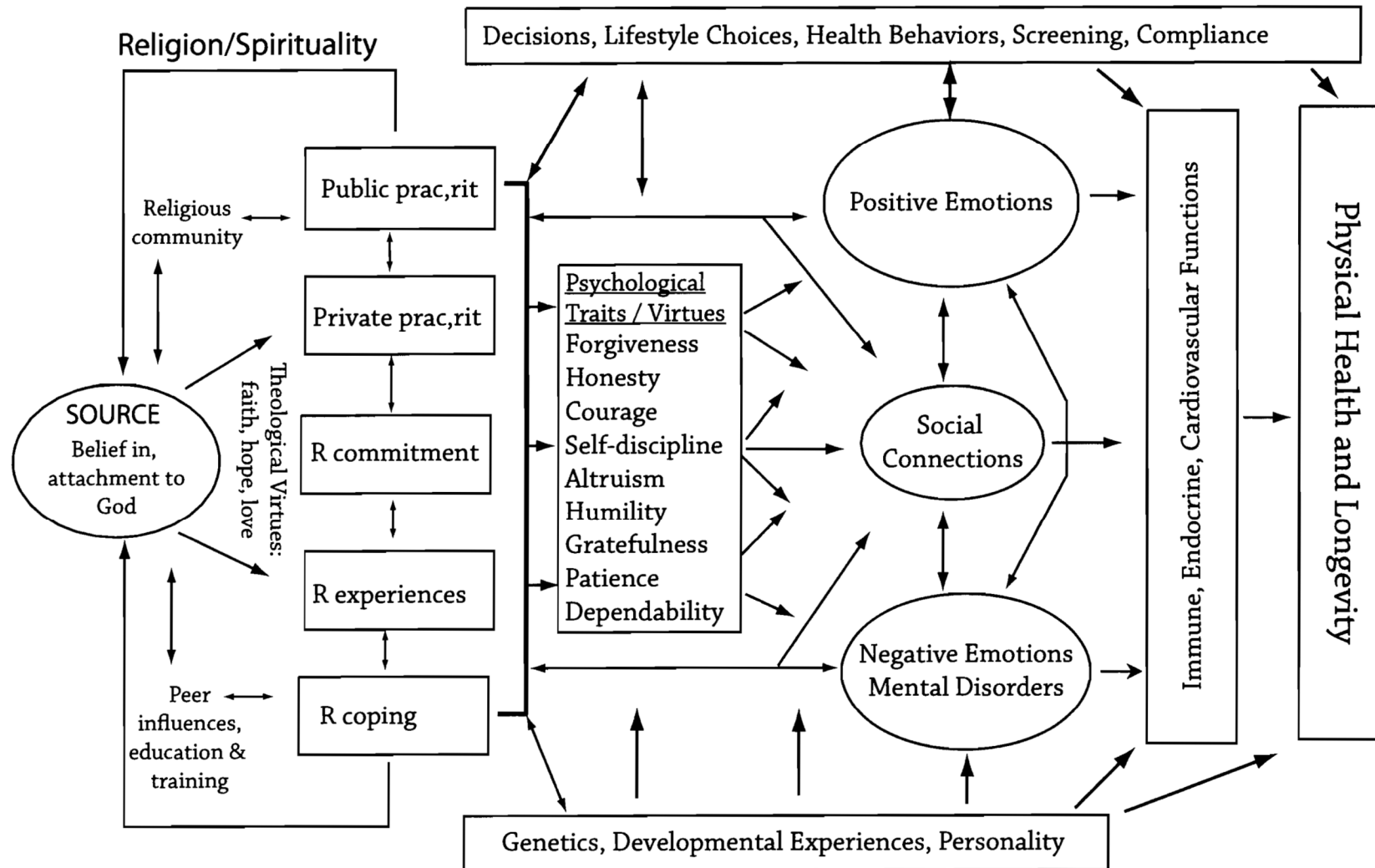


# Model of causal pathways on health

The main determinants of health



# Model of causal pathways to physical health

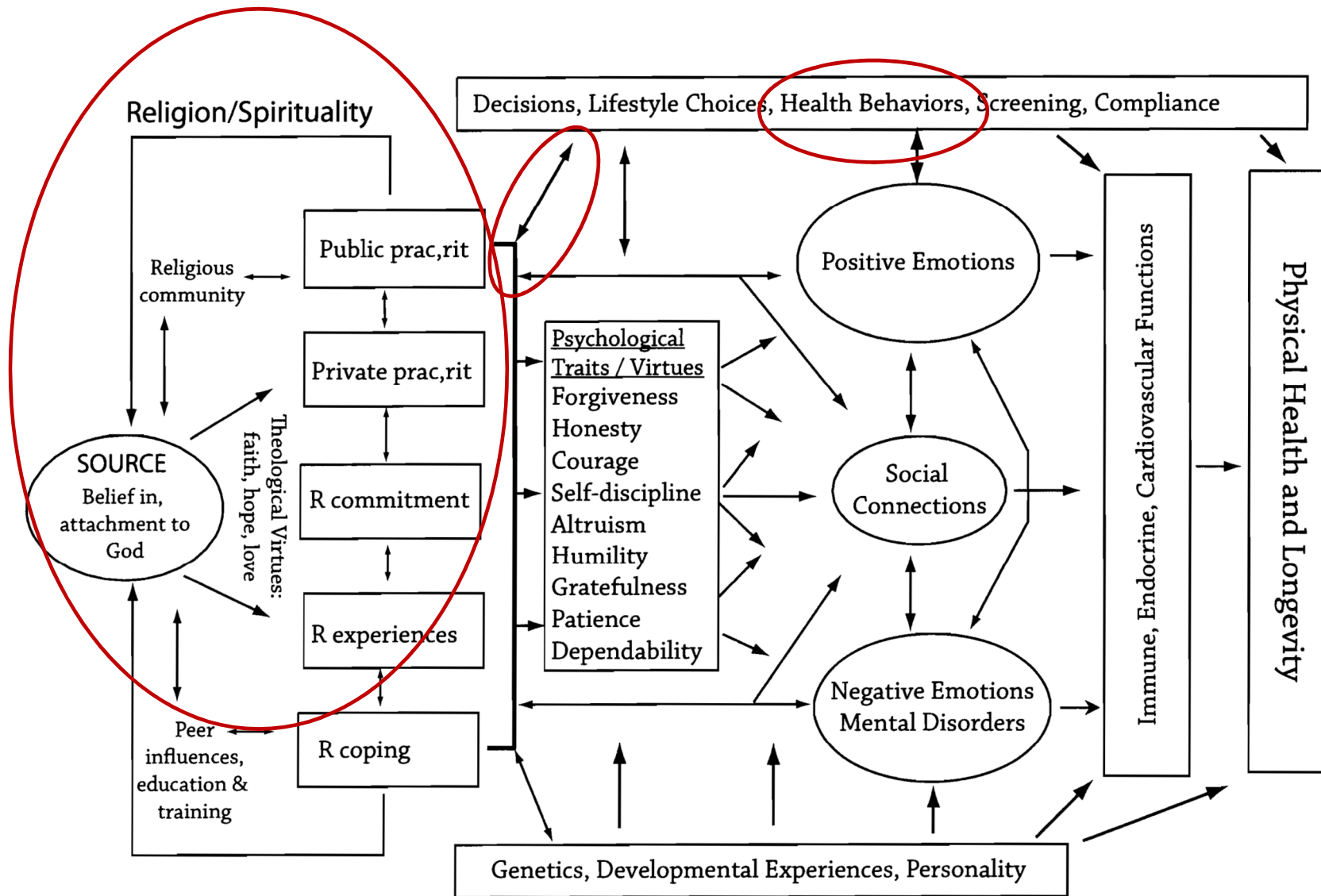


Quelle: Koenig HG, King DE, Carson VB. Handbook of religion and health. Oxford; New York: Oxford University Press; 2011. Seite 587

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# Model of causal pathways to physical health



Quelle: Koenig HG, King DE, Carson VB. Handbook of religion and health. Oxford; New York: Oxford University Press; 2011. Seite 587

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## ● Associations between religion/spirituality and health behaviour in literatur

### – Healthy eating behaviours

Wallace JM, Forman TA. Health Education & Behavior. 1998;25(6):721–41;  
Reid TLB, Smalls C. Western Journal of Black Studies;  
Callaghan D. Issues in Comprehensive Pediatric Nursing. 2006;29(4):191–204  
2004;28(1):283

### – More physical activity

Nagel und Sgoutas-Emch . Journal of Religion and Health. 2007;46(1):141–54.

### – Less often smoking

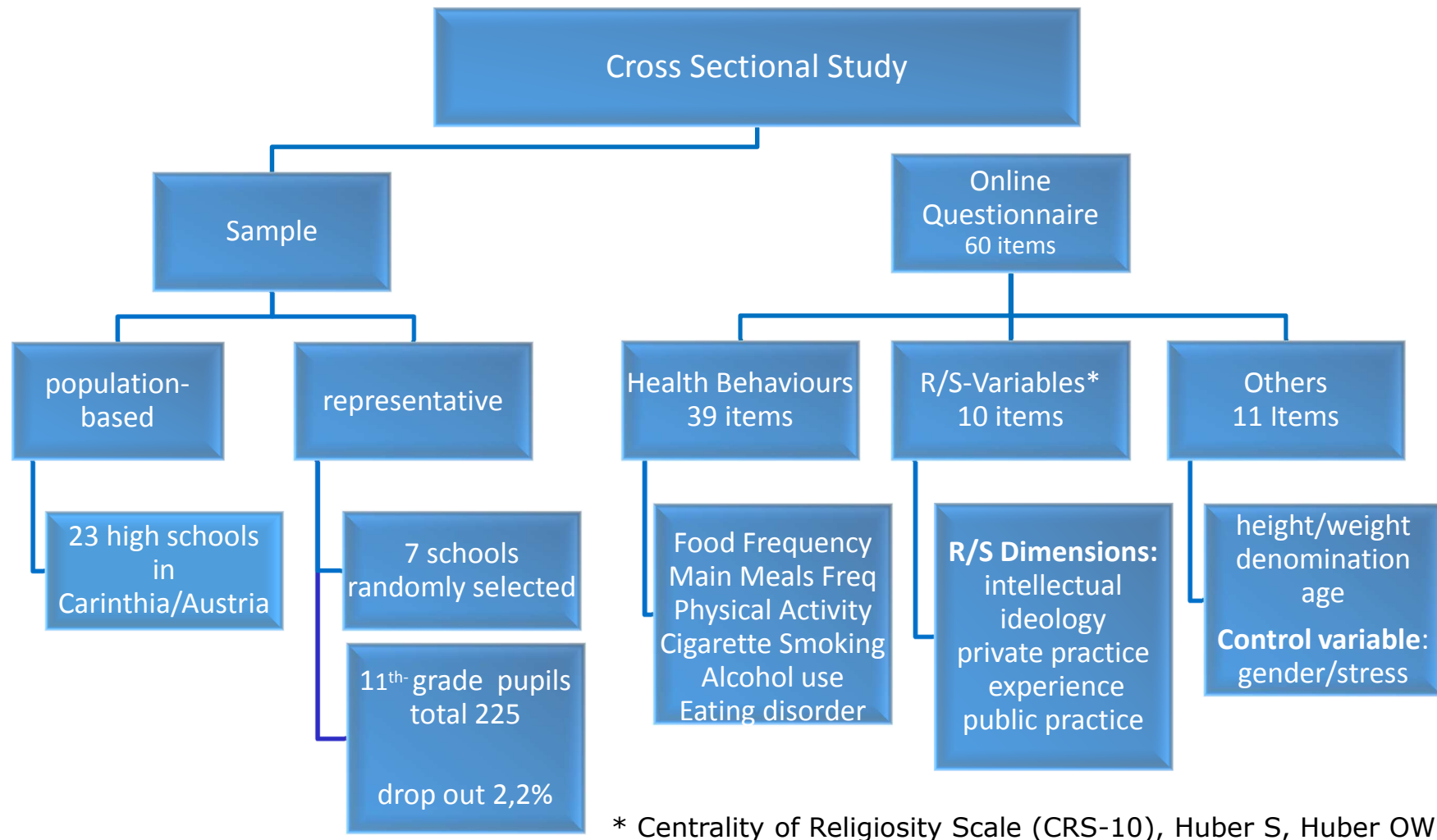
Brown TN et al. Prevention Science. 2001;2(1):29–43;  
Dunn MS. Journal of Alcohol and Drug Education. 2005;49(1):73;  
Wallace JM, Forman TA. Health Education & Behavior. 1998;25(6):721–41;  
Nonnemaker JM et al. Soc Sci Med. Dezember 2003;57(11):2049–54

### – Less often alcohol use and drunkenness

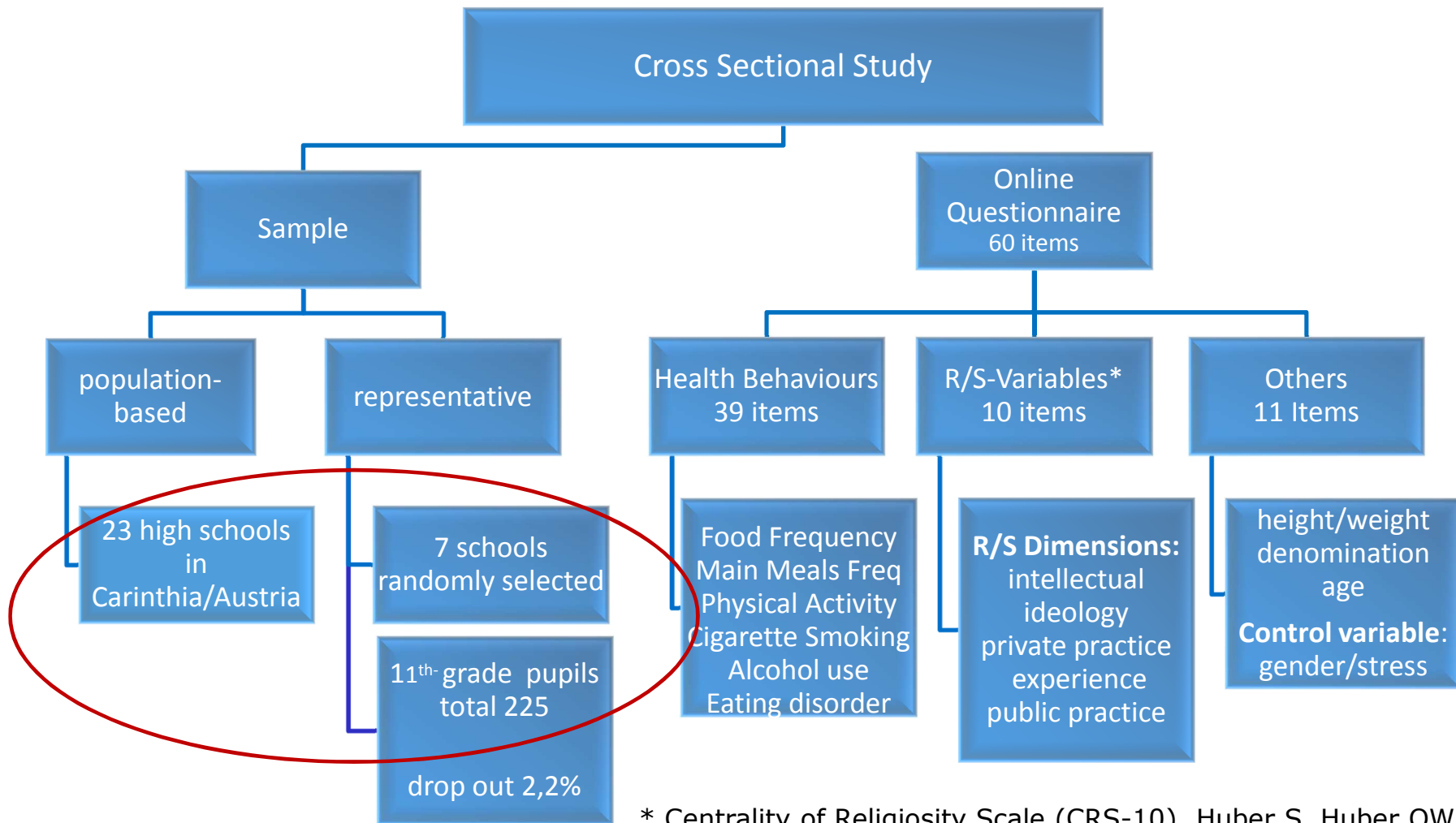
Nagel und Sgoutas-Emch . Journal of Religion and Health. 2007;46(1):141–54.;  
Wallace JM, Forman TA. Health Education & Behavior. 1998;25(6):721–41;  
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Marsiglia FF et al. American Journal of Comm



# Methods

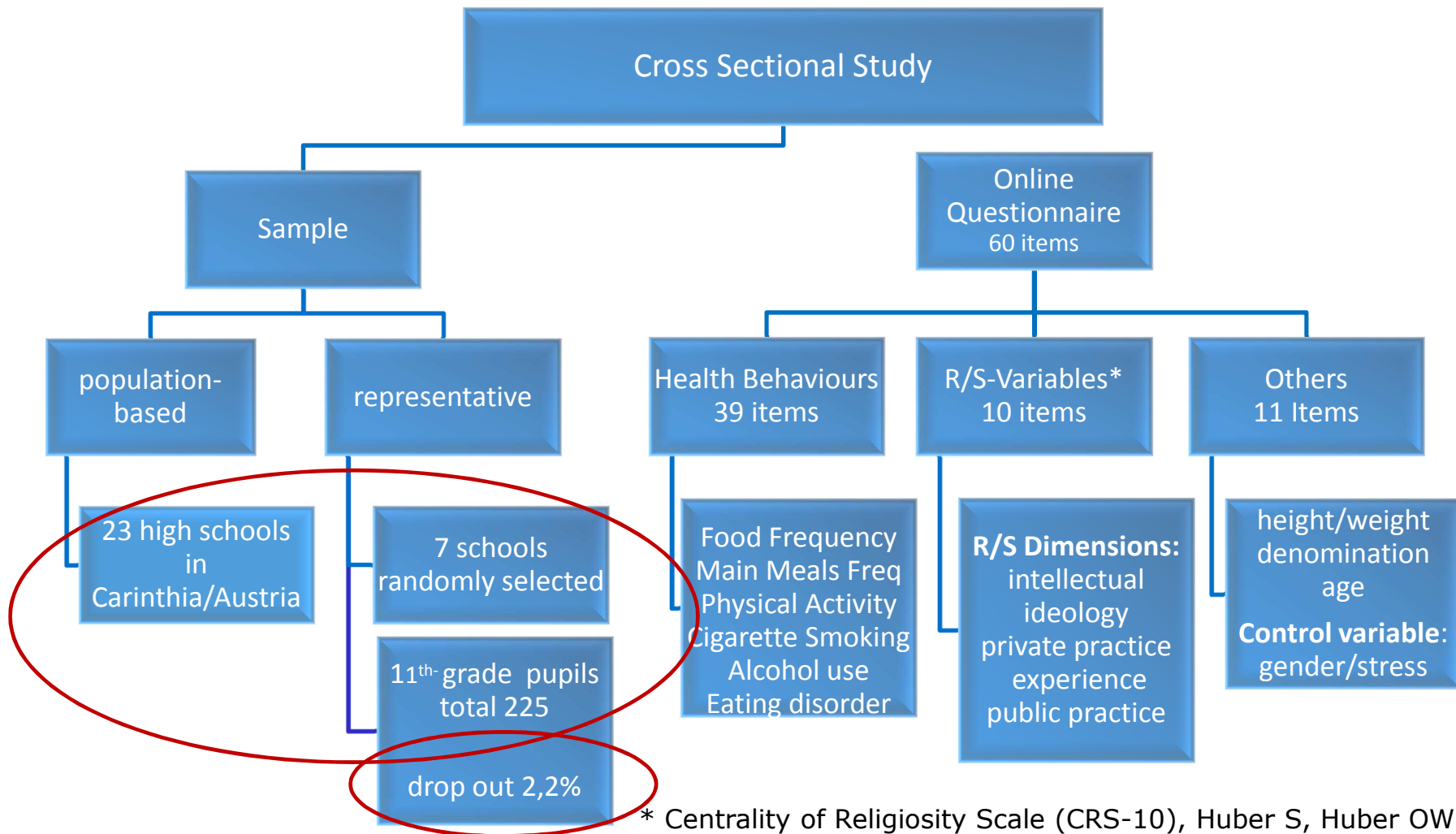


# Methods

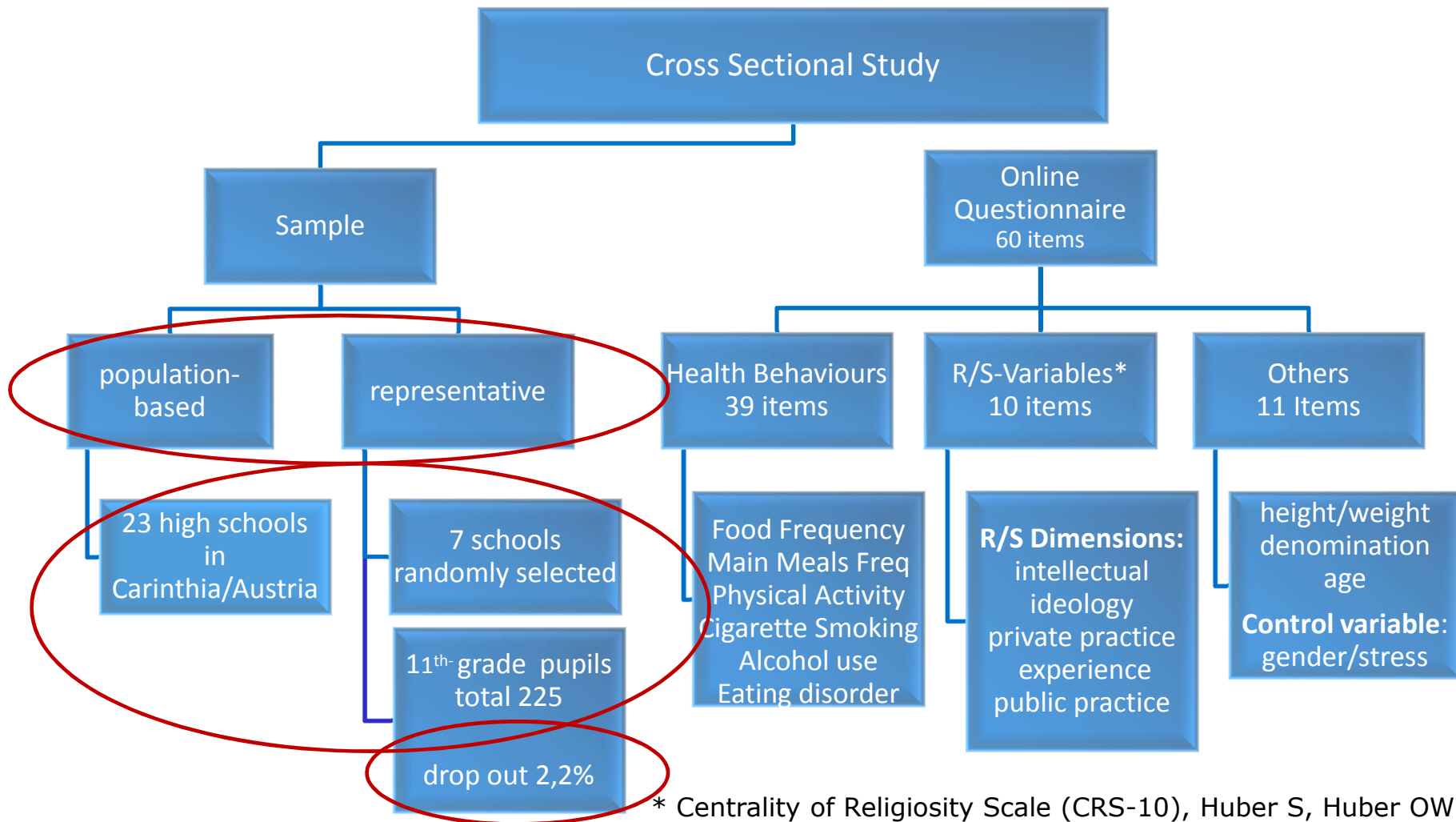




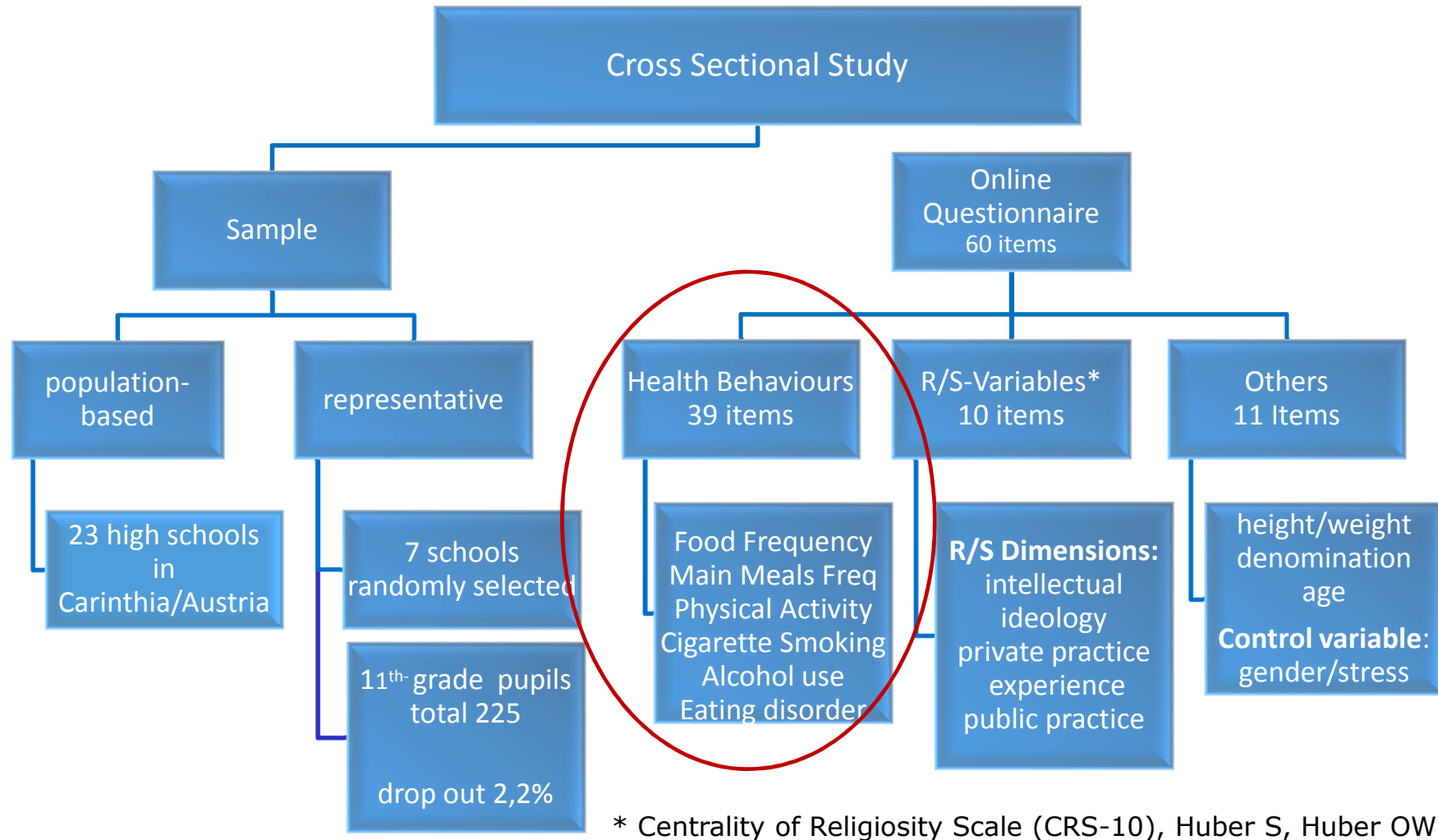
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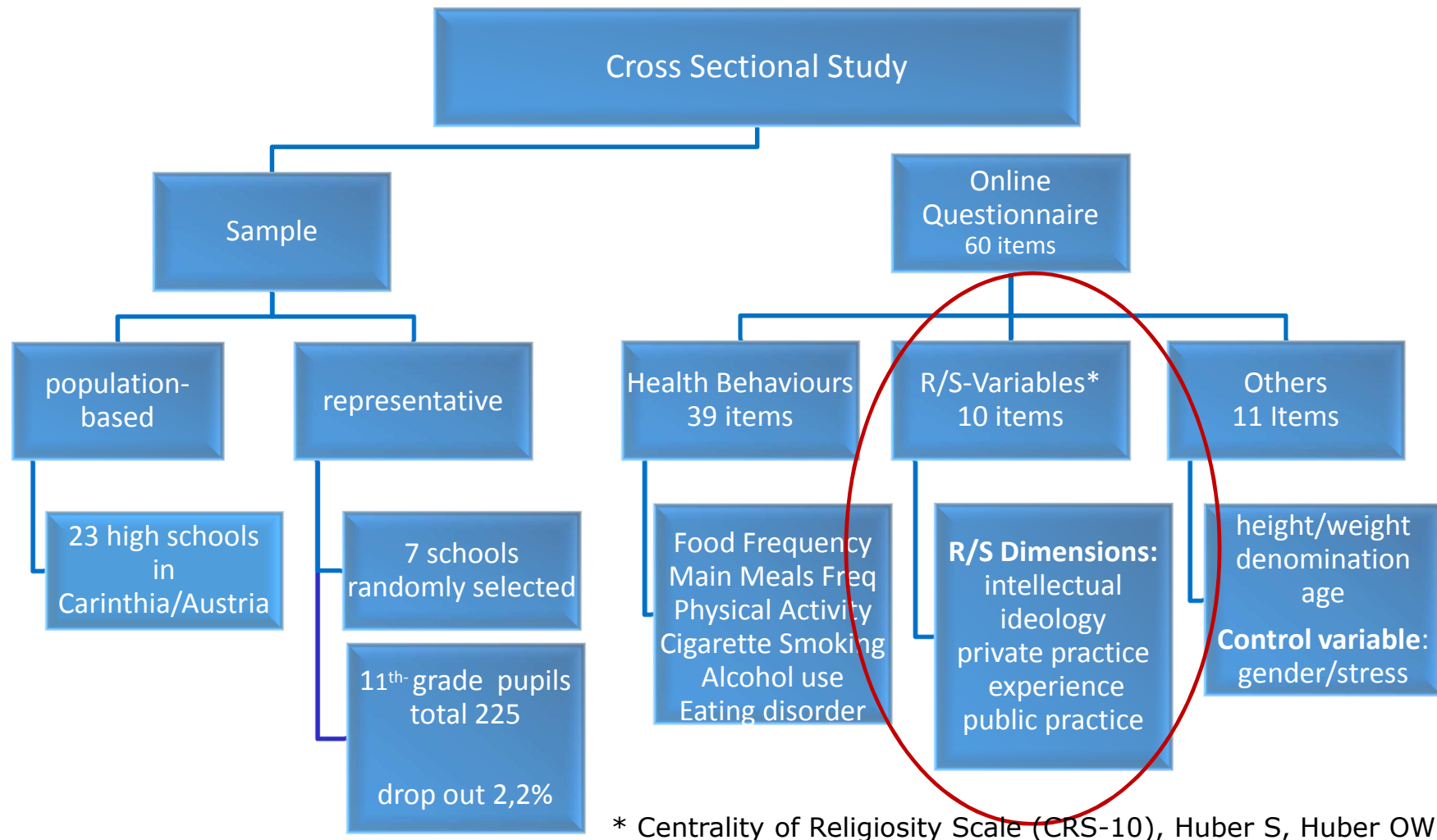
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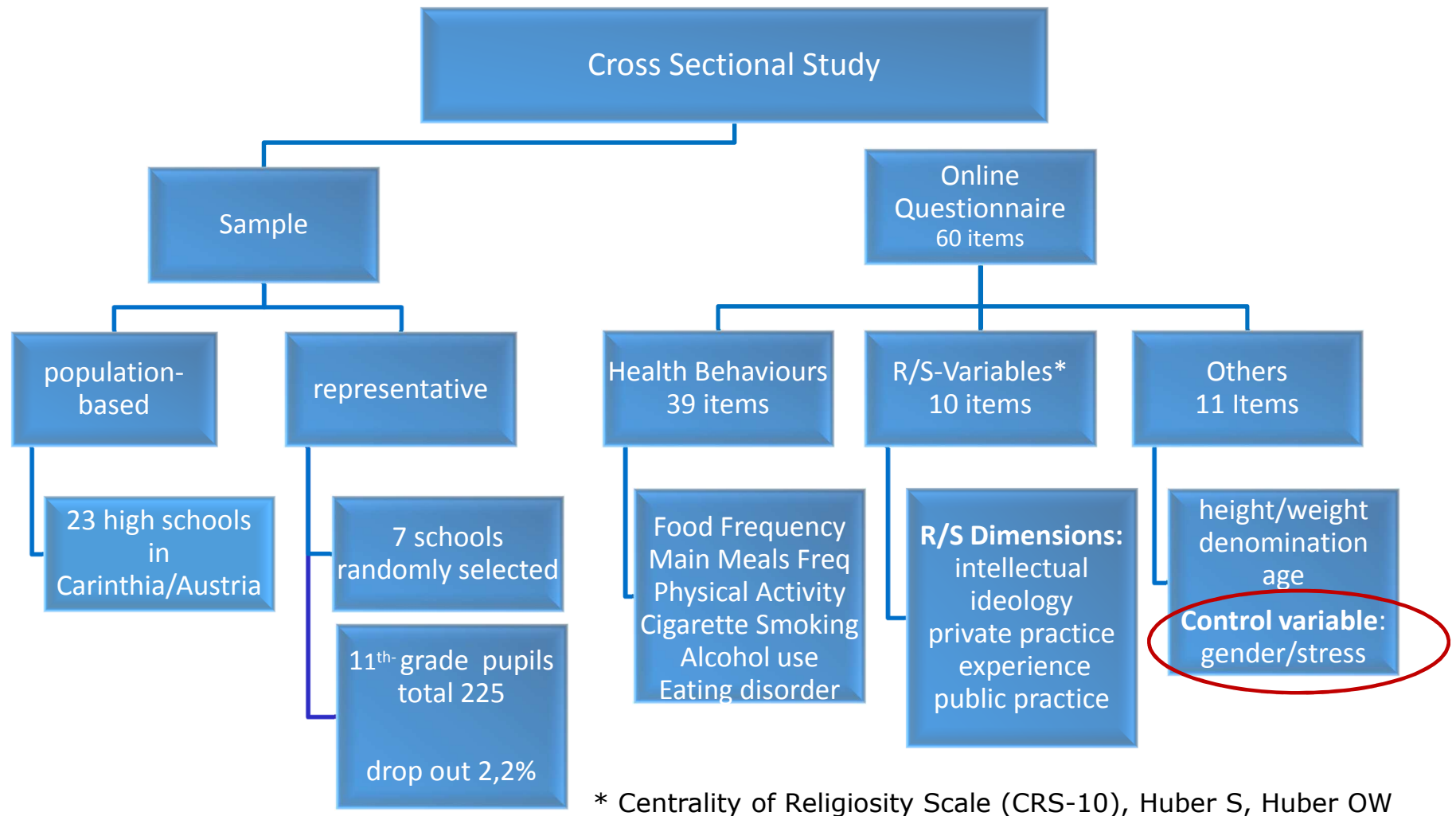


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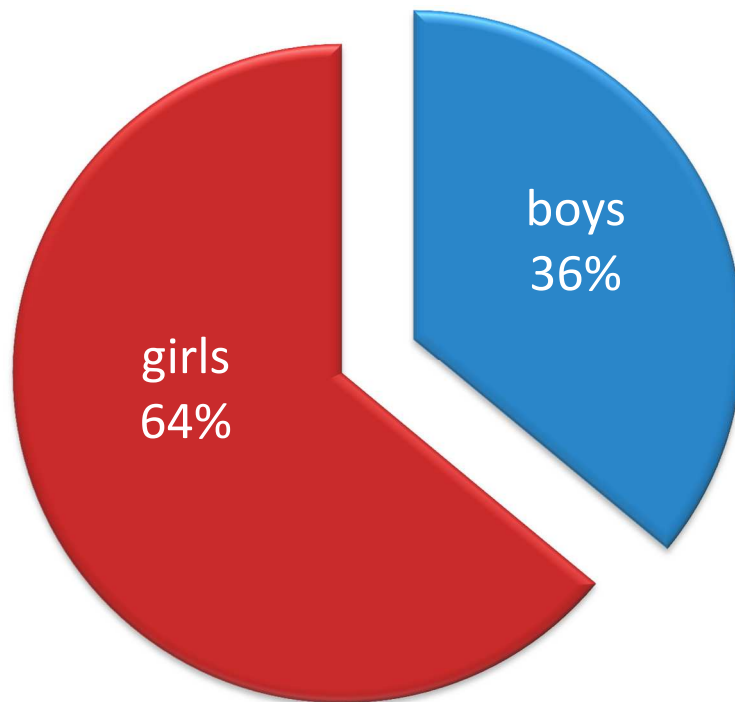


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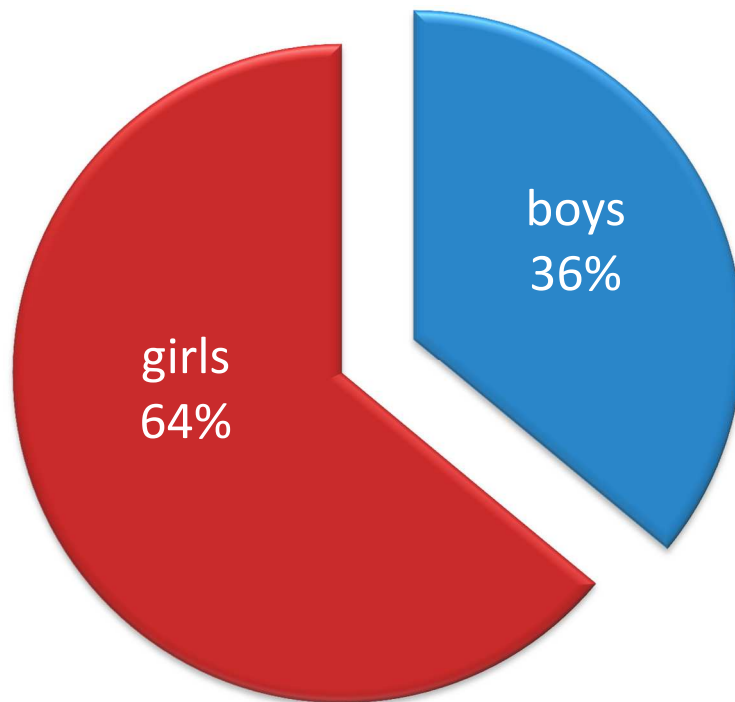
## Gender percentage



n = 220 (♀ = 140; ♂ = 80)



## Gender percentage



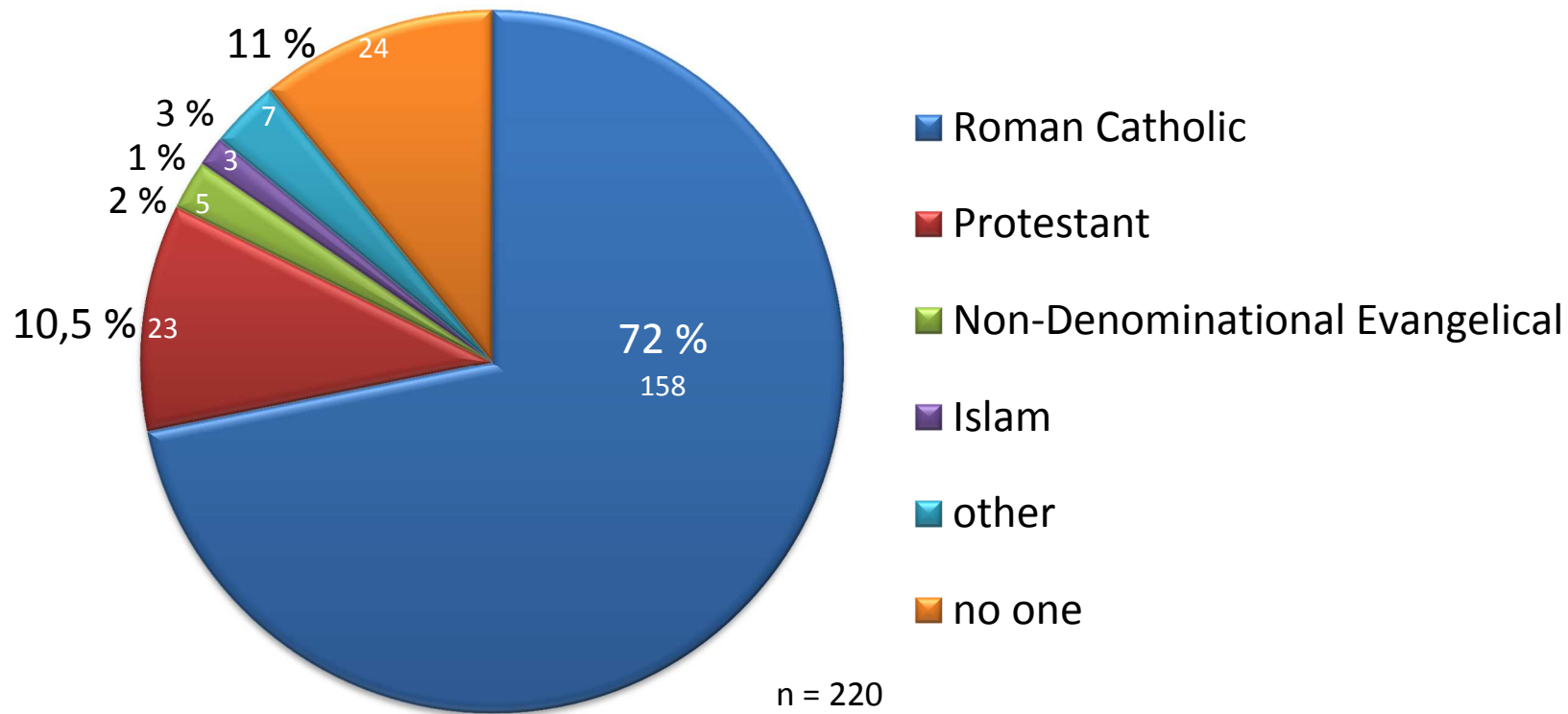
average age 16.4 years  
range 15[n=1] to 18[n=16]

n = 220 (♀ = 140; ♂ = 80)

# Results - Sample

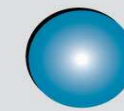


## Denomination

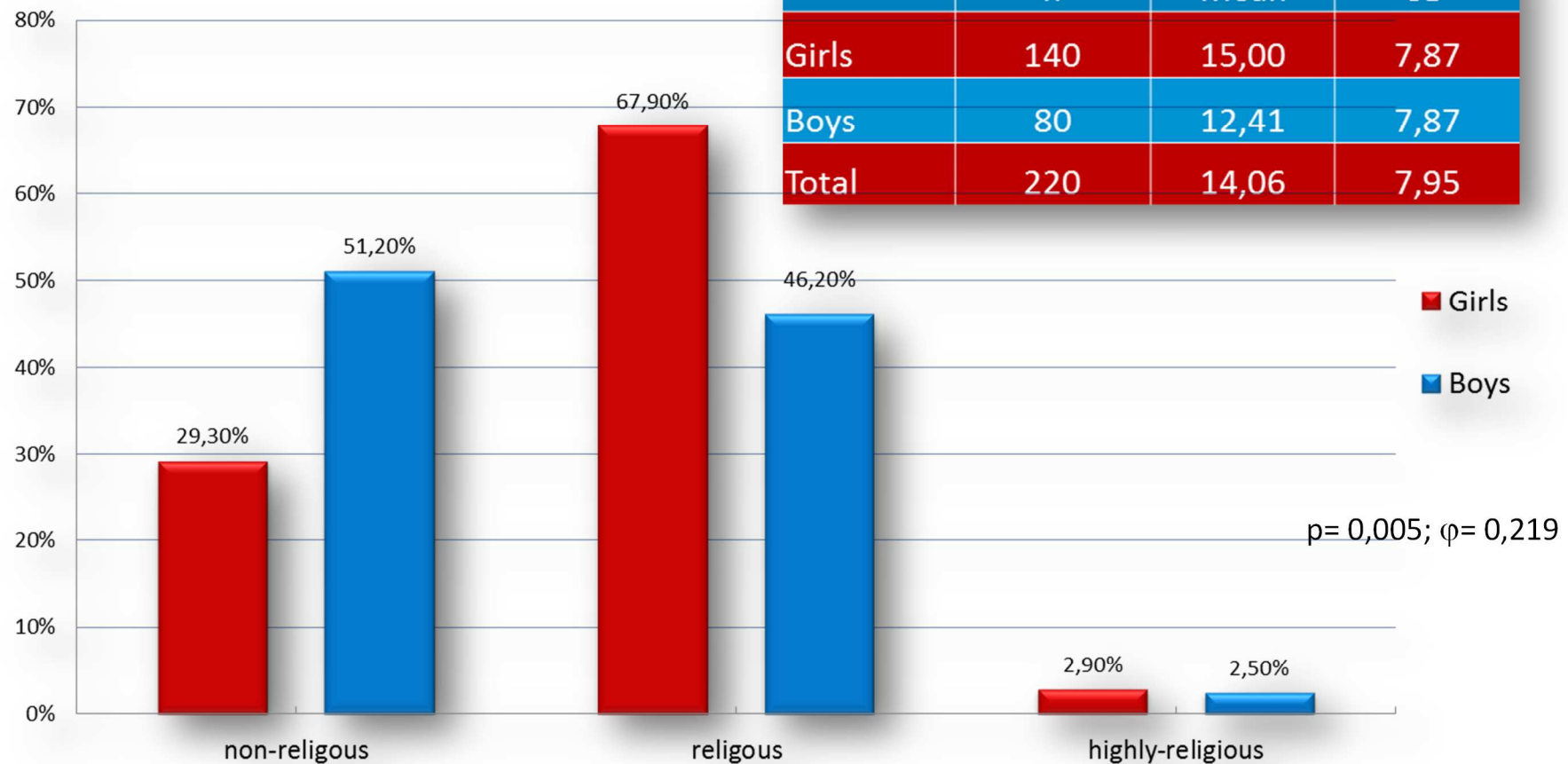




# Results – R/S



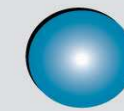
## Categorical Centrality Groups by Gender



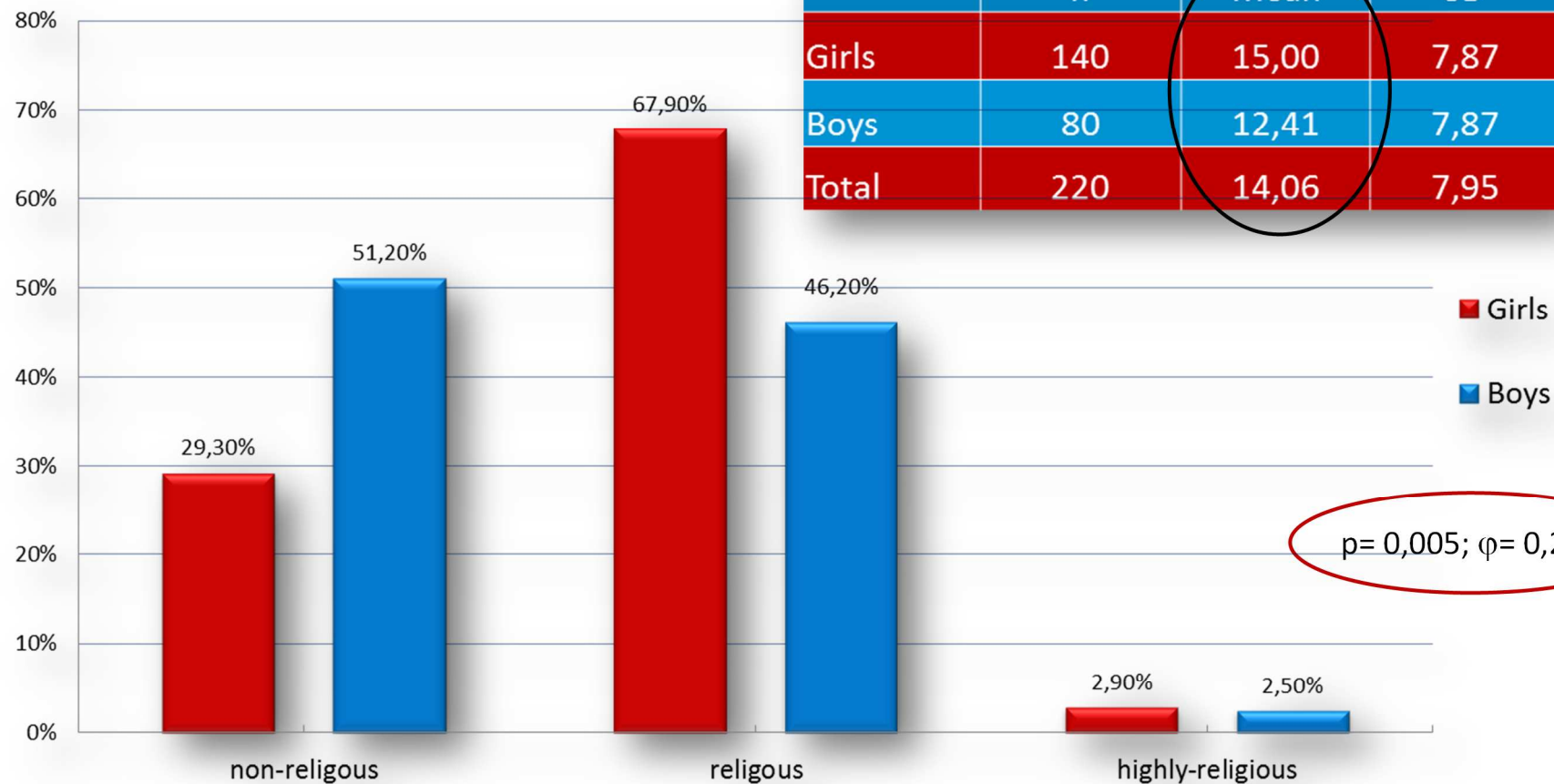
## CRS-Score (value 0-40) by Gender Mean and standard deviation

	n	Mean	SD
Girls	140	15,00	7,87
Boys	80	12,41	7,87
Total	220	14,06	7,95

# Results – R/S



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Total	220	14,06	7,95

$p = 0,005$ ;  $\varphi = 0,219$

# Results – Correlations



## Spearman Correlations

	RS-C-Score	RS-intellect.	RS-ideology	RS-private pr.	RS-experience	RS-public pr.	Stress-Score
Positive-Food Freq-Score	0,07	0,072	-0,018	0,09	-0,026	,144*	0,071
Negative-Food Freq-Score	-0,104	-0,032	-0,025	<b>-,161*</b>	-0,02	-0,119	- 0,007
<b>Total-Food Freq-Score</b>	<b>,141*<sup>P</sup></b>	0,078	0,03	<b>,179**</b>	0,023	<b>,138*</b>	0,007
<b>Main Meal-Freq Score</b>	<b>,135*</b>	<b>,140*</b>	0,076	0,068	<b>,135*</b>	0,094	<b>-,140*</b>
<b>Scoff-Score (ED)</b>	0,122	0,009	0,045	<b>,203**</b>	0,06	0,118	<b>,177**</b>
<b>Smoking Frequency</b>	<b>-0,124<sup>g</sup></b>	-0,029	-0,085	-0,131	-0,111	-0,077	<b>,164*</b>
<b>Smoking Cig. Number</b>	<b>-,480**</b>	-0,13	<b>-,298*</b>	<b>-,459**</b>	<b>-,403**</b>	<b>-,461**</b>	0,085
<b>Drunkenness Freq.</b>	<b>-,285**</b>	-0,101	<b>-,195**</b>	<b>-,296**</b>	<b>-,231**</b>	<b>-,195**</b>	0,093
<b>Phys Activity Frequency</b>	<b>0,025<sup>b</sup></b>	0,031	-0,019	-0,034	0,086	0,052	<b>-,114*</b>
<b>Phys Activity Duration</b>	0,043	0,034	-0,04	0,016	0,071	0,121	- 0,042

RS (C) = Religion /Spirituality (Centrality); ED = Eating disorder

\*\* The correlation is significant for  $p < 0.01$

\* The correlation is significant for  $P < 0,05$

<sup>P</sup> Pearson correlation

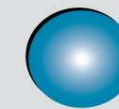
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<sup>g</sup> The correlations is significant in girls ( $-,202^*$ )

**n = 220**

Except Smoking Cig. Number: n=67

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# Results – Regressions analysis



## Binary Logistic Regression – **Drunkness Frequency** with Control- und Correlating Health Behaviour Variables

Health Behaviour Categories	Abbreviation
<b>Fruit and vegetable consumption</b>	Fruit/Veg.
0 = at least once a day fruit or veg.	
1 = neither fruit nor veg. daily	
<b>Main meal frequency</b>	MMF
0 = at least 2 MM or more daily	
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<b>Physical activity</b>	activity
0 = at least 3 times a week	
1 = less than 3 times a week	
<b>Drunkness frequency</b>	drunk
0 = never or only once in life	
1 = more than once	
<b>Cigarette smoking number daily</b>	smoking N
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1 = 2 or more C daily	
<b>Cigarette smoking frequency</b>	smoking F
0 = Non smoker	
1 = smoker	
<b>Eating disorder (scoff-score)</b>	ED
0 = no suspicion of ED	
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# Results – Regressions analysis



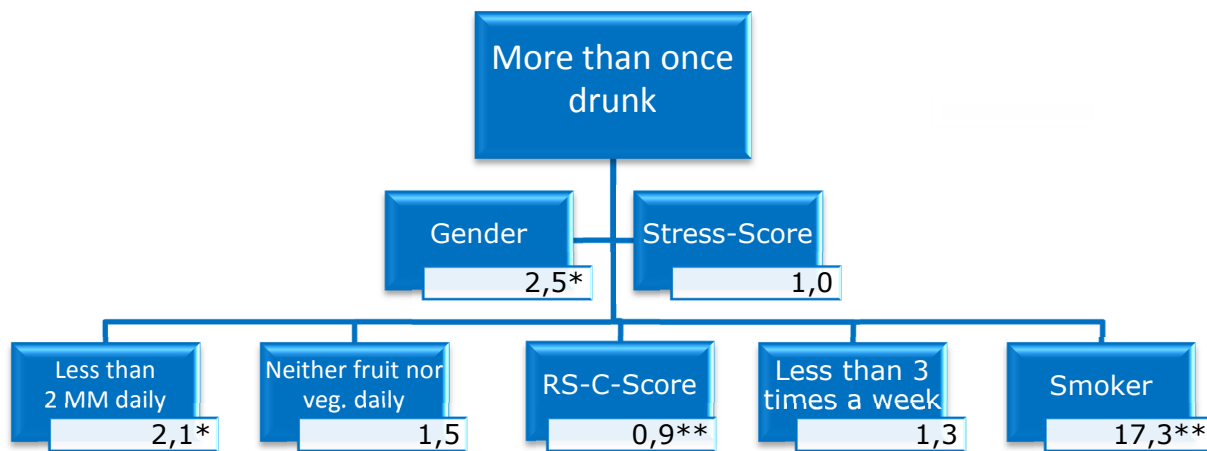
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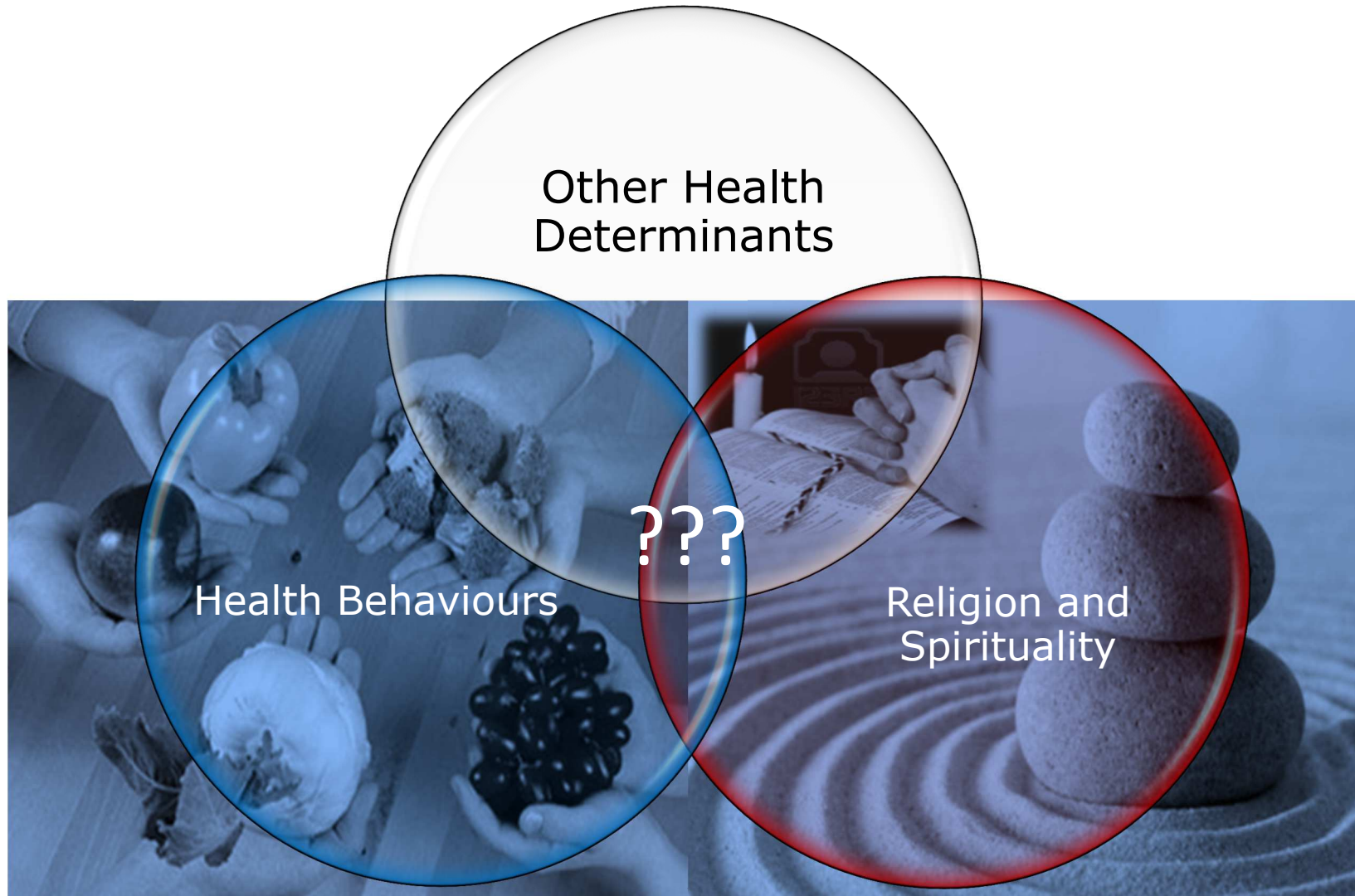
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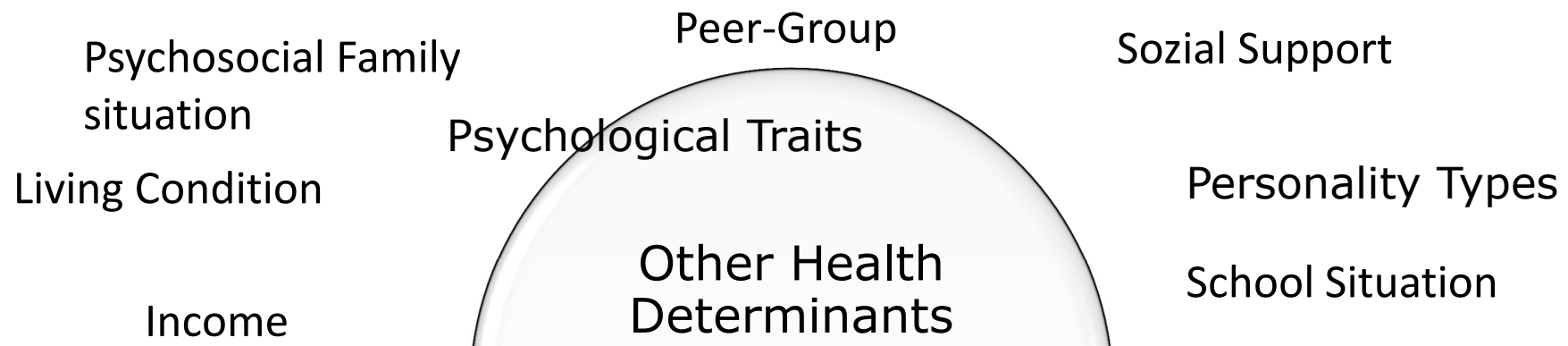
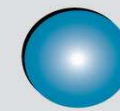
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Nagelk. R2	Variables	Sig.	Odds Ratio	95% Confidence Interval	
<b>,382</b>	<b>MMF</b>	<b>,057</b>	<b>2,1</b>	<b>0,98</b>	<b>4,51</b>
	Fruit/Veg	,201	1,5	0,79	2,98
	<b>RS-C-Score</b>	<b>,008</b>	<b>0,9</b>	<b>0,90</b>	<b>0,98</b>
	Activity F	,459	1,3	0,66	2,53
	<b>Smoking F</b>	<b>,000</b>	<b>17,3</b>	<b>6,23</b>	<b>48,01</b>
	Stress-Score	,941	1,0	,89	1,10
	Gender	,012	2,5	1,23	5,30

# Discussion – Limitation



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# Conclusion



- This study shows that religion/spirituality is positively associated with several beneficial health behaviours.
- The role of religion/spirituality in health behaviours should not be ignored.
- Further studies are needed to explore the influence of other confounding or mediating variables on this association. This should include socioeconomic status, family dynamics, social influence, peer group and personality types.
- Surveys investigating health behaviours among adolescents should include questions on religion/spirituality.



# Conclusion



- This study shows that religion/spirituality is positively associated with several beneficial health behaviours.
- The role of religion/spirituality in health behaviours should not be ignored.
- Further studies are needed to explore the influence of other confounding or mediating variables on this association. This should include socioeconomic status, family dynamics, social influence, peer group and personality types.
- Surveys investigating health behaviours among adolescents should include questions on religion/spirituality.







## ● Sources of pictures

[http://das-ist-drin.de/blog/uploads/TricksfuerGemuese\\_5-am-Tag.jpg](http://das-ist-drin.de/blog/uploads/TricksfuerGemuese_5-am-Tag.jpg)

<http://us.123rf.com>

[http://www.flw-wiesbaden.de/res/img/cdb4e92b95b7/  
1194.meditationzen1.jpg](http://www.flw-wiesbaden.de/res/img/cdb4e92b95b7/1194.meditationzen1.jpg)

# Results – Correlations



## Spearman Correlations

	Positive-FF-Score	Negative-FF-Score	Total-FF-Score	MF-Score	Scoff-Score	Smoking F	Smoking N	Drunk
Negative-FF-Score	-,374**							
Total-FF-Score	,752**	-,810**						
MF-Score	,166*	0,069	0,053 <sup>b</sup>					
Scoff-Score (ED)	0,097 <sup>b</sup>	-,274**	,210**	-,234**				
Smoking Frequency	-0,055	0,009	-0,064	-,259**	,141*			
Smoking Cig.Number	-0,198	,284*	-,337**	-,403**	-0,001	,887**		
Drunkenness Frequ.	-0,102	,158*	-,189**	-,215**	0,072 <sup>g</sup>	,522**	,576**	
Activity Frequency	,242**	-0,06 <sup>g</sup>	,161*	,212**	-0,011	-,176**	-0,079	-,133*
Activity Duration	,325**	-0,038 <sup>g</sup>	,185**	,170*	-0,035	-0,072	-0,12	-0,073 <sup>g</sup>

FF = Food Frequency; MF = Meal Frequency; ED = Eating disorder

\*\* The correlation is significant for  $p < 0.01$

\* The correlation is significant for  $P < 0,05$

<sup>b</sup> The correlations is significant in boys ; <sup>g</sup> The correlations is significant in girls

**n = 220**

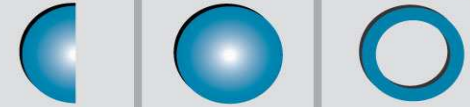
Except Smoking Cig. Number: n=67

# Association between Health Behaviours and Religion/Spirituality in Adolescents

Gabriele Gäbler, Hermann Toplak, René Hefti, Josef Haas, Elisabeth Pail



# Background



- The prevalence of certain risk factors for chronic diseases is high among young people
  - E.g. smoking, alcohol abuse, low fruit and vegetable consumption, and lack of physical activity
- These lifestyle factors influence one another and are further affected by social and environmental factors

Ramelow D et al. WHO-HBSC-Survey 2010. Bundesministerium für Gesundheit (BMG). 2011;

Currie C. HBSC international report from the 2009/2010 survey. WHO Regional Office for Europe; 2012

Ludwig Boltzmann Institut. Kinder und Jugend. Gesundheitsbericht Kärnten. Amt der Kärntner Landesregierung; 2006

Hölling H, Schlack R. KiGGS. Bundesgesundheitsblatt Gesundheitsforschung Gesundheitsschutz. Juni 2007;50(5-6):794–9

Lampert T. KiGGS. Deutsches Arzteblatt international. April 2008;105(15):265–71.

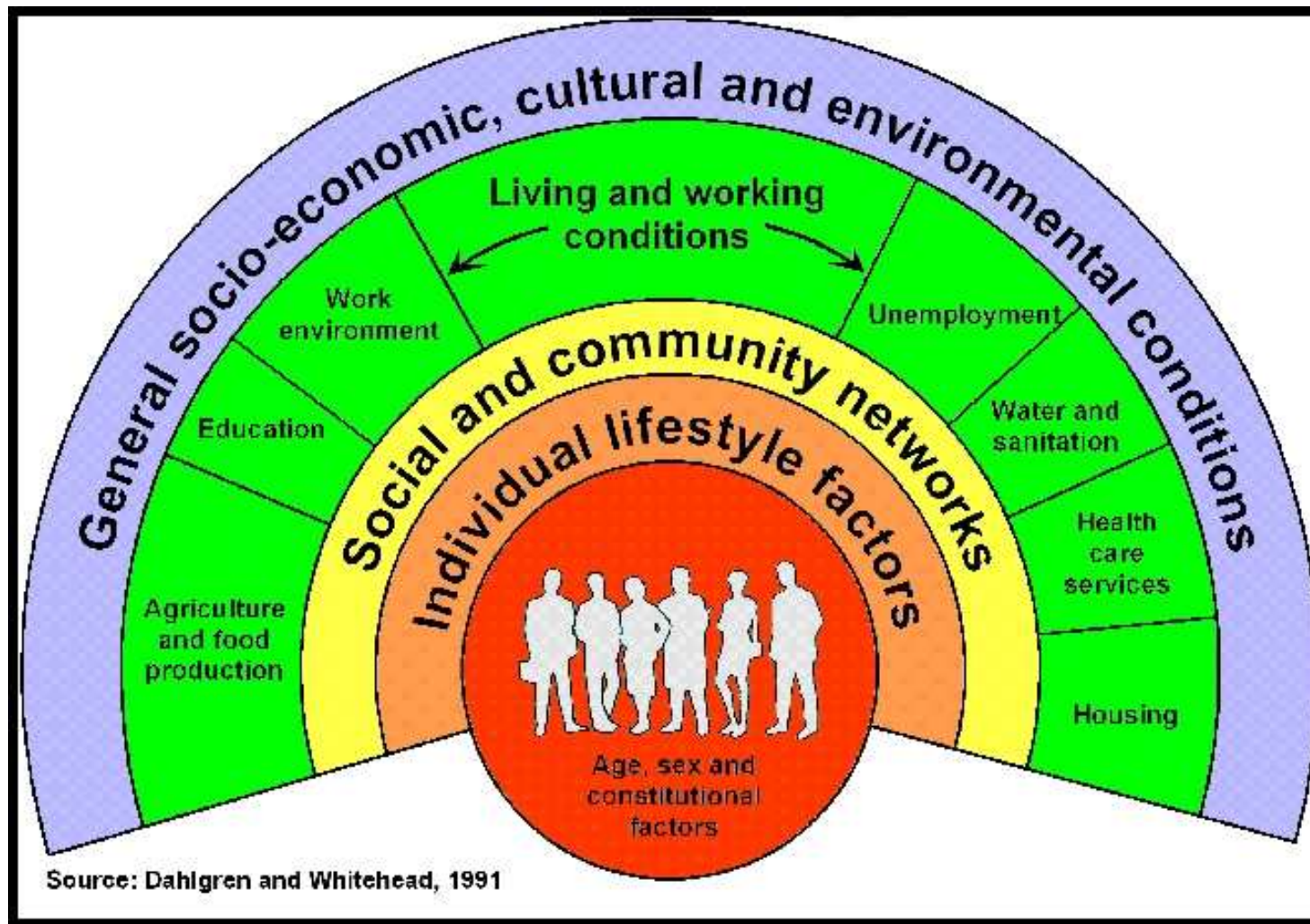
Lampert T et al. KiGGS. Bundesgesundheitsblatt, Gesundheitsforschung, Gesundheitsschutz. Juni 2007;50(5-6):634–42.

Quelle: [http://www.herzpraxis-nuernberg.de/pics/keyvisual\\_risikofaktoren.jpg](http://www.herzpraxis-nuernberg.de/pics/keyvisual_risikofaktoren.jpg)



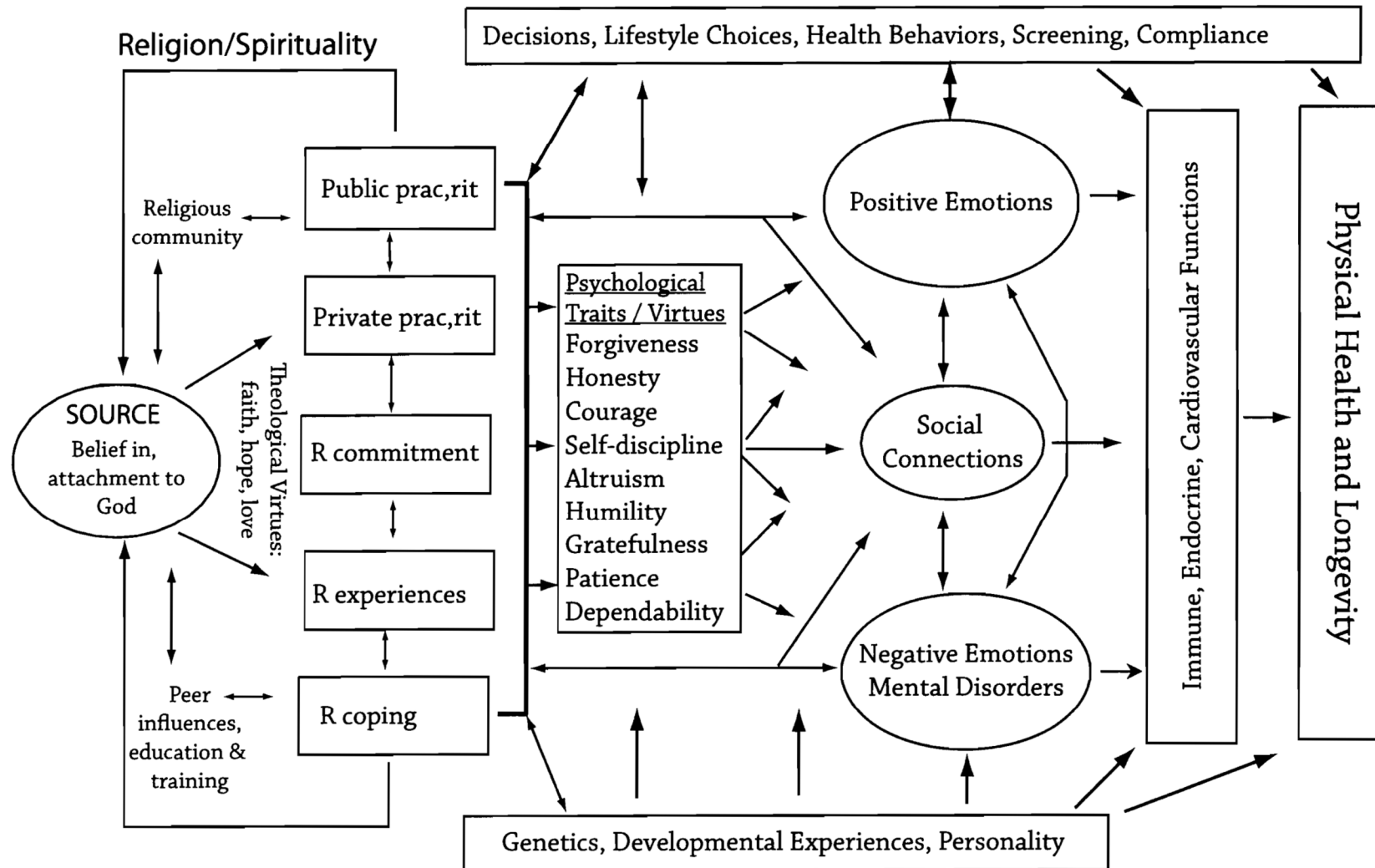
# Model of causal pathways on health

The main determinants of health





# Model of causal pathways to physical health

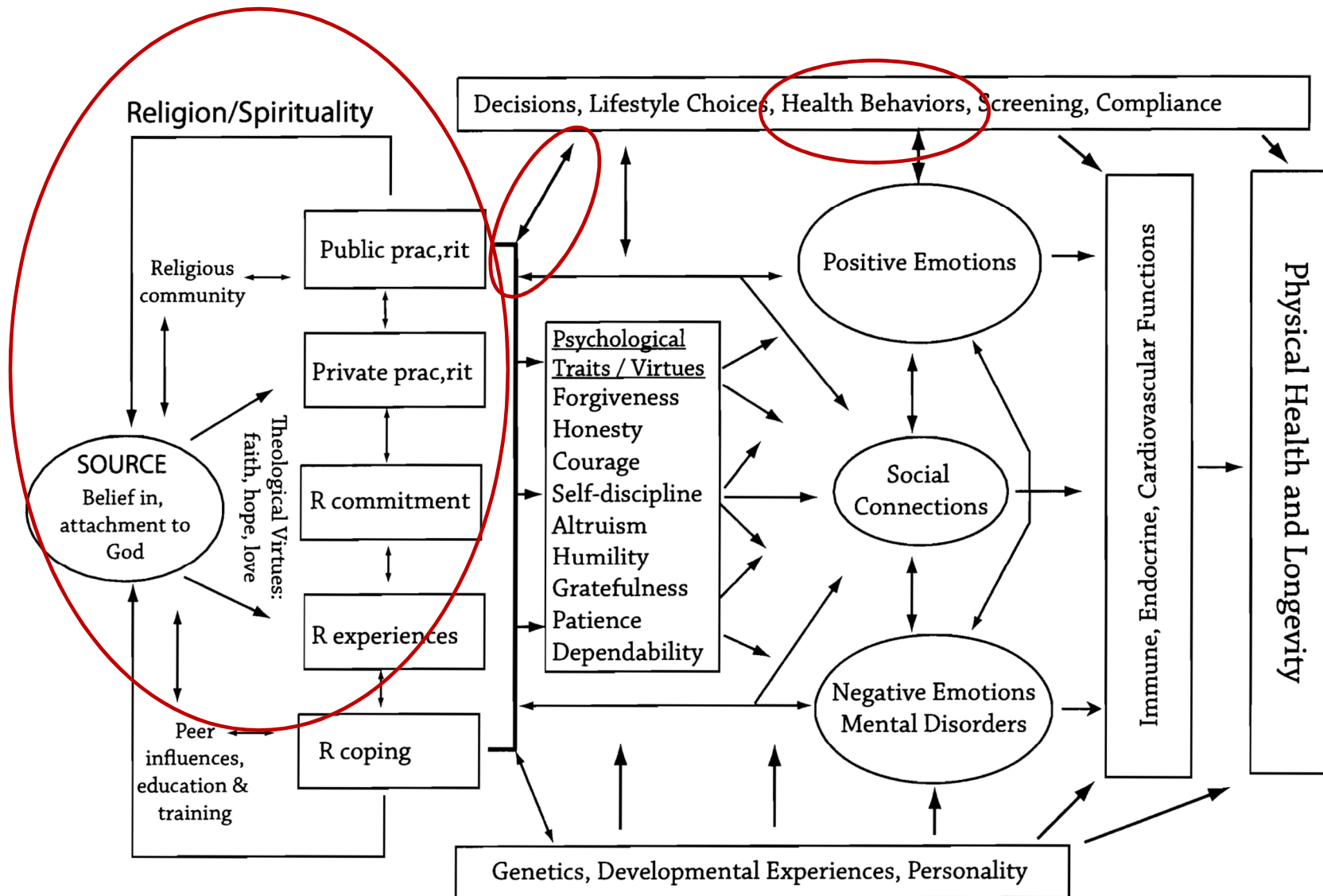


Quelle: Koenig HG, King DE, Carson VB. Handbook of religion and health. Oxford; New York: Oxford University Press; 2011. Seite 587

© Gabriele GÄBLER



# Model of causal pathways to physical health



Quelle: Koenig HG, King DE, Carson VB. Handbook of religion and health. Oxford; New York: Oxford University Press; 2011. Seite 587

© Gabriele GÄBLER



## ● Associations between religion/spirituality and health behaviour in literatur

### – Healthy eating behaviours

Wallace JM, Forman TA. Health Education & Behavior. 1998;25(6):721–41;  
Reid TLB, Smalls C. Western Journal of Black Studies;  
Callaghan D. Issues in Comprehensive Pediatric Nursing. 2006;29(4):191–204  
2004;28(1):283

### – More physical activity

Nagel und Sgoutas-Emch . Journal of Religion and Health. 2007;46(1):141–54.

### – Less often smoking

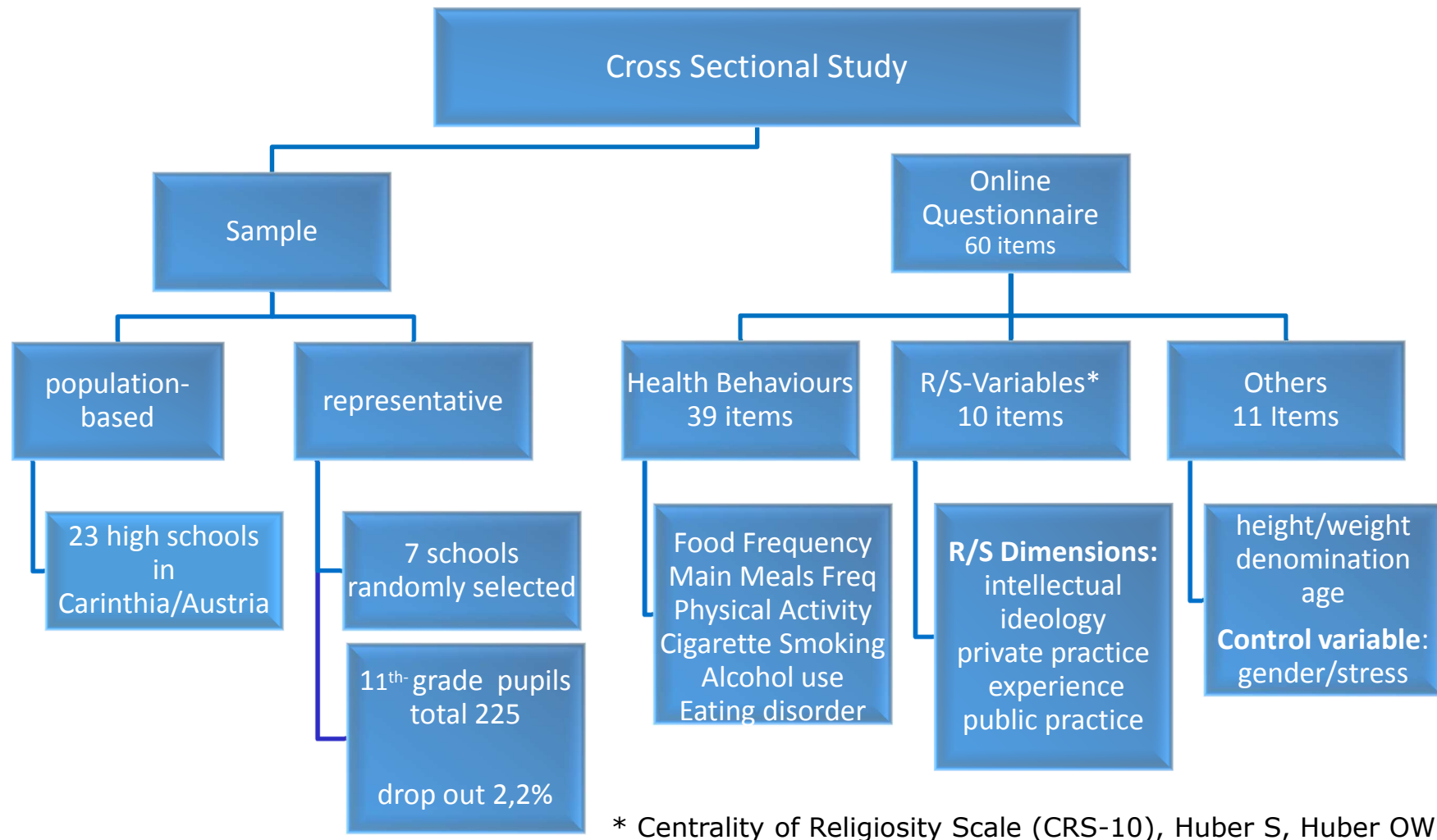
Brown TN et al. Prevention Science. 2001;2(1):29–43;  
Dunn MS. Journal of Alcohol and Drug Education. 2005;49(1):73;  
Wallace JM, Forman TA. Health Education & Behavior. 1998;25(6):721–41;  
Nonnemaker JM et al. Soc Sci Med. Dezember 2003;57(11):2049–54

### – Less often alcohol use and drunkenness

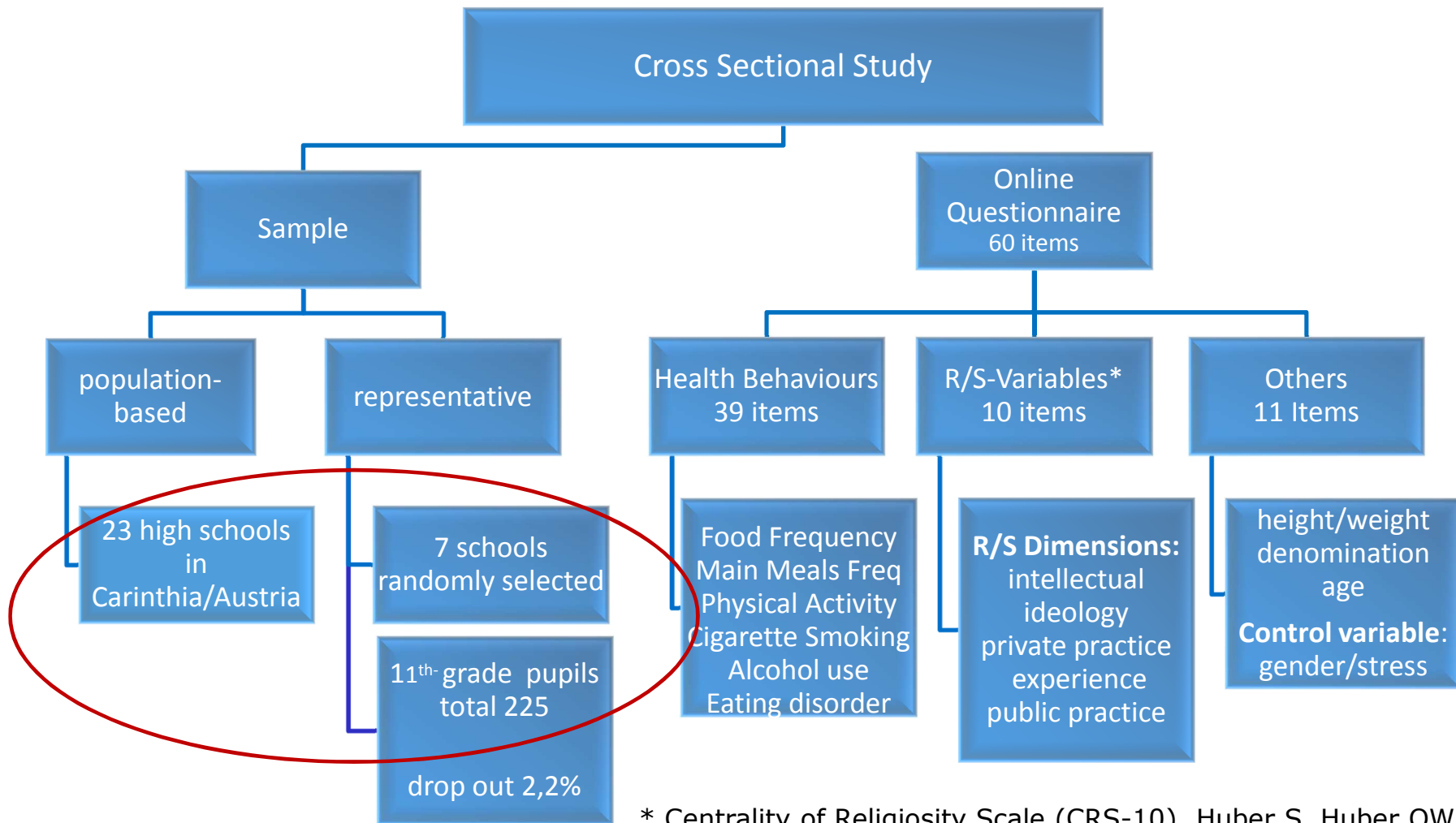
Nagel und Sgoutas-Emch . Journal of Religion and Health. 2007;46(1):141–54.;  
Wallace JM, Forman TA. Health Education & Behavior. 1998;25(6):721–41;  
Nonnemaker JM et al. Soc Sci Med. Dezember 2003;57(11):2049–54;  
Brown TN et al. Prevention Science. 2001;2(1):29–43;  
Marsiglia FF et al. American Journal of Comm



# Methods

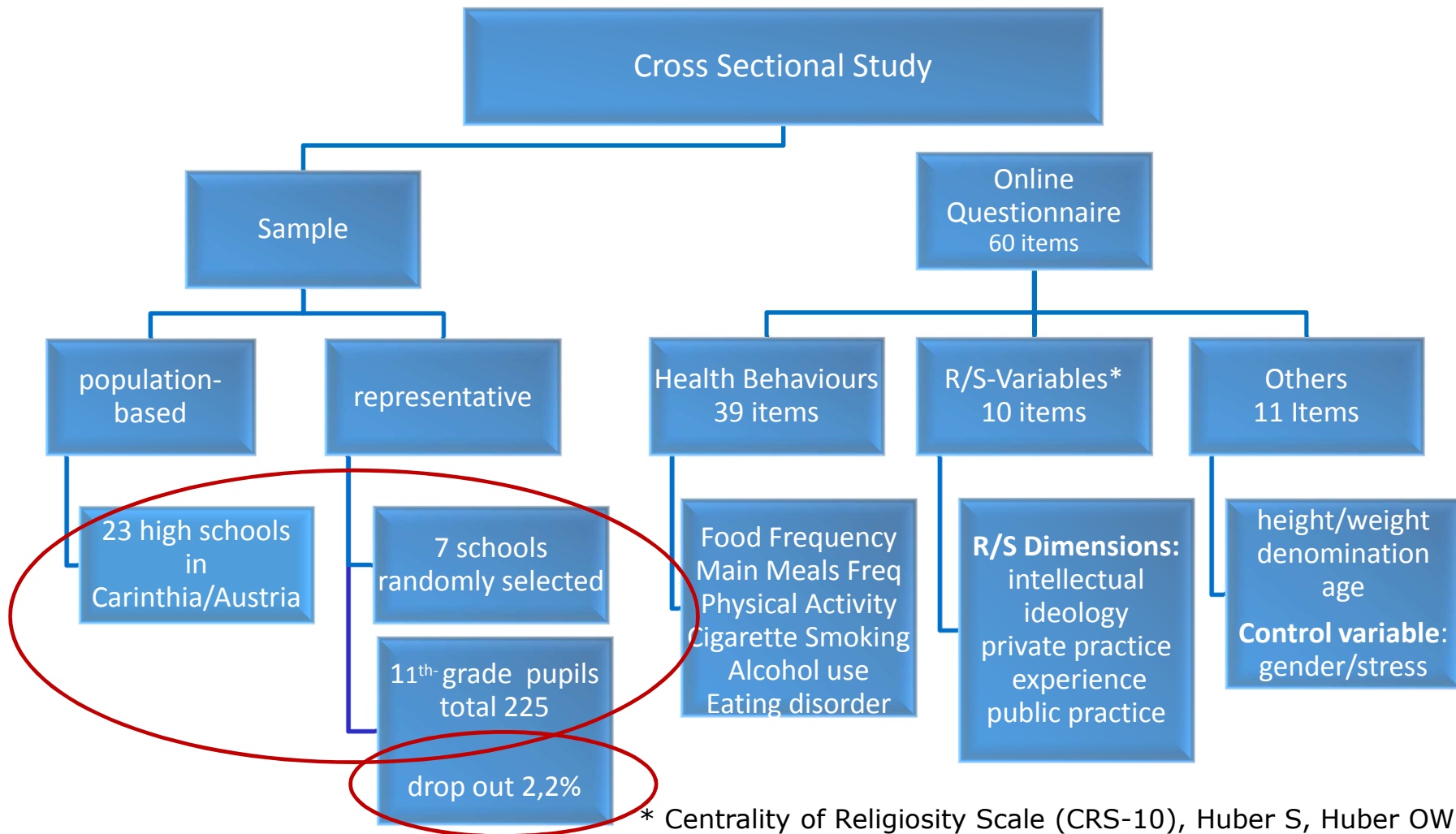


# Methods

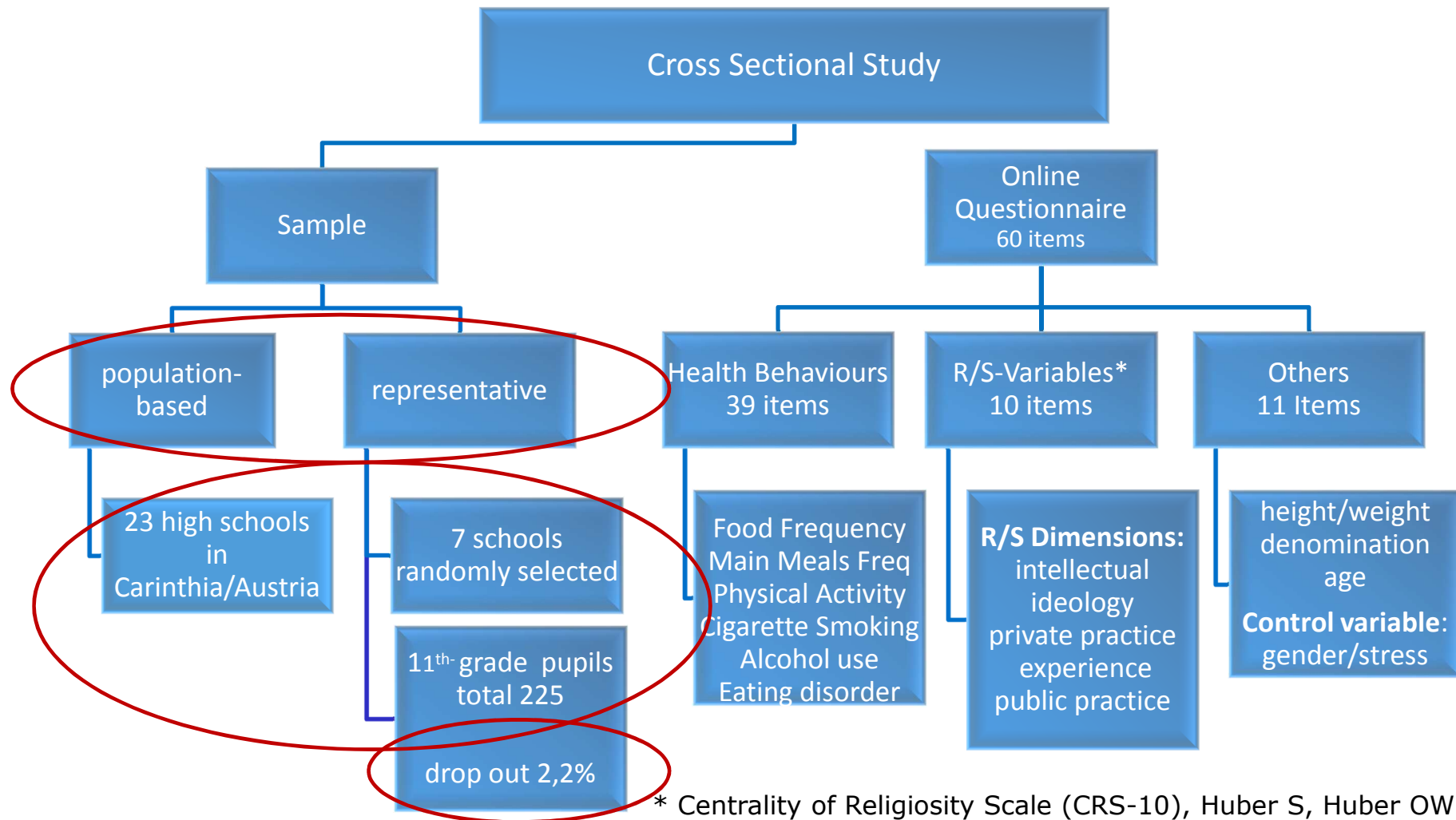


\* Centrality of Religiosity Scale (CRS-10), Huber S, Huber OW

# Methods

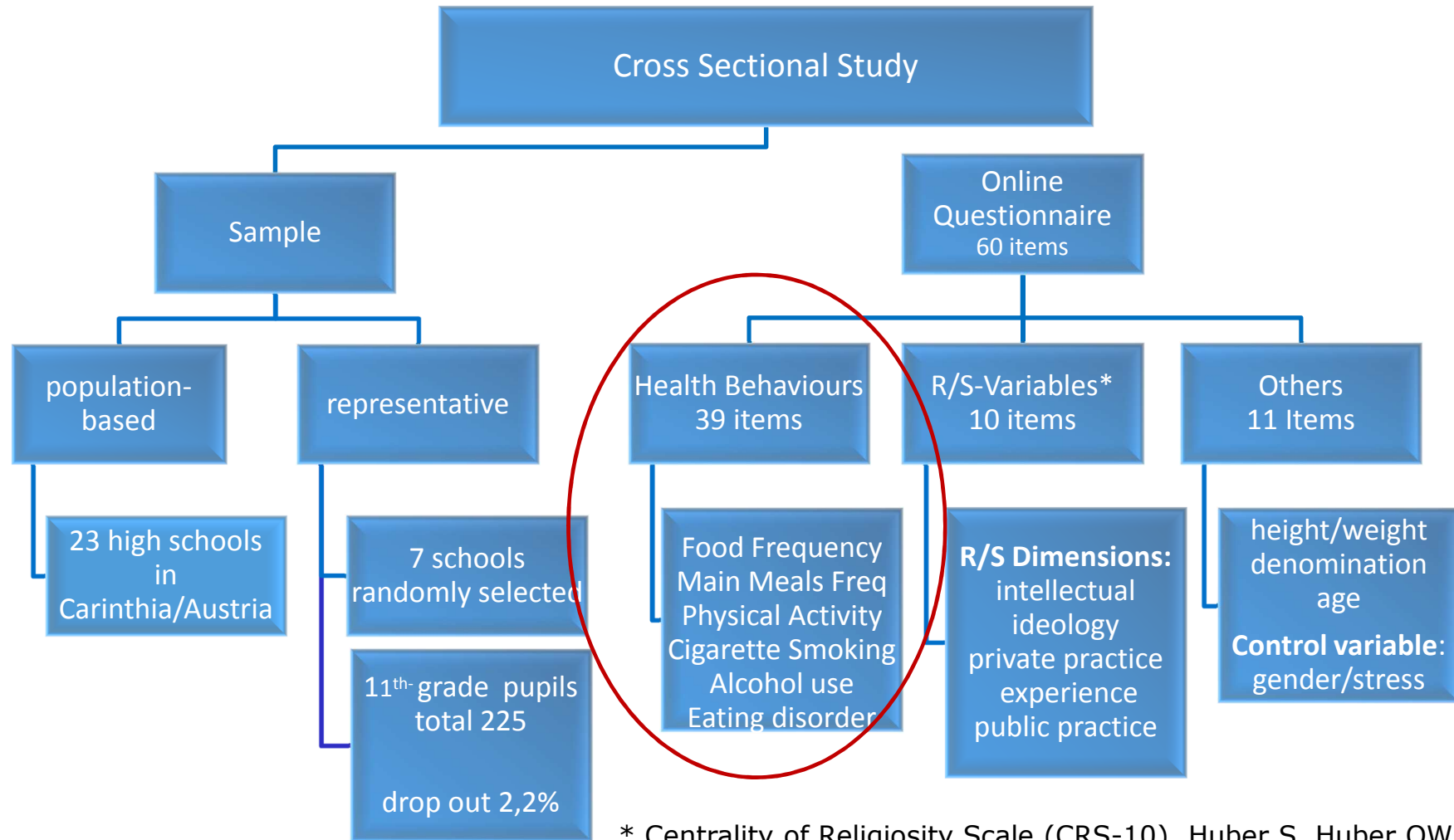


# Methods

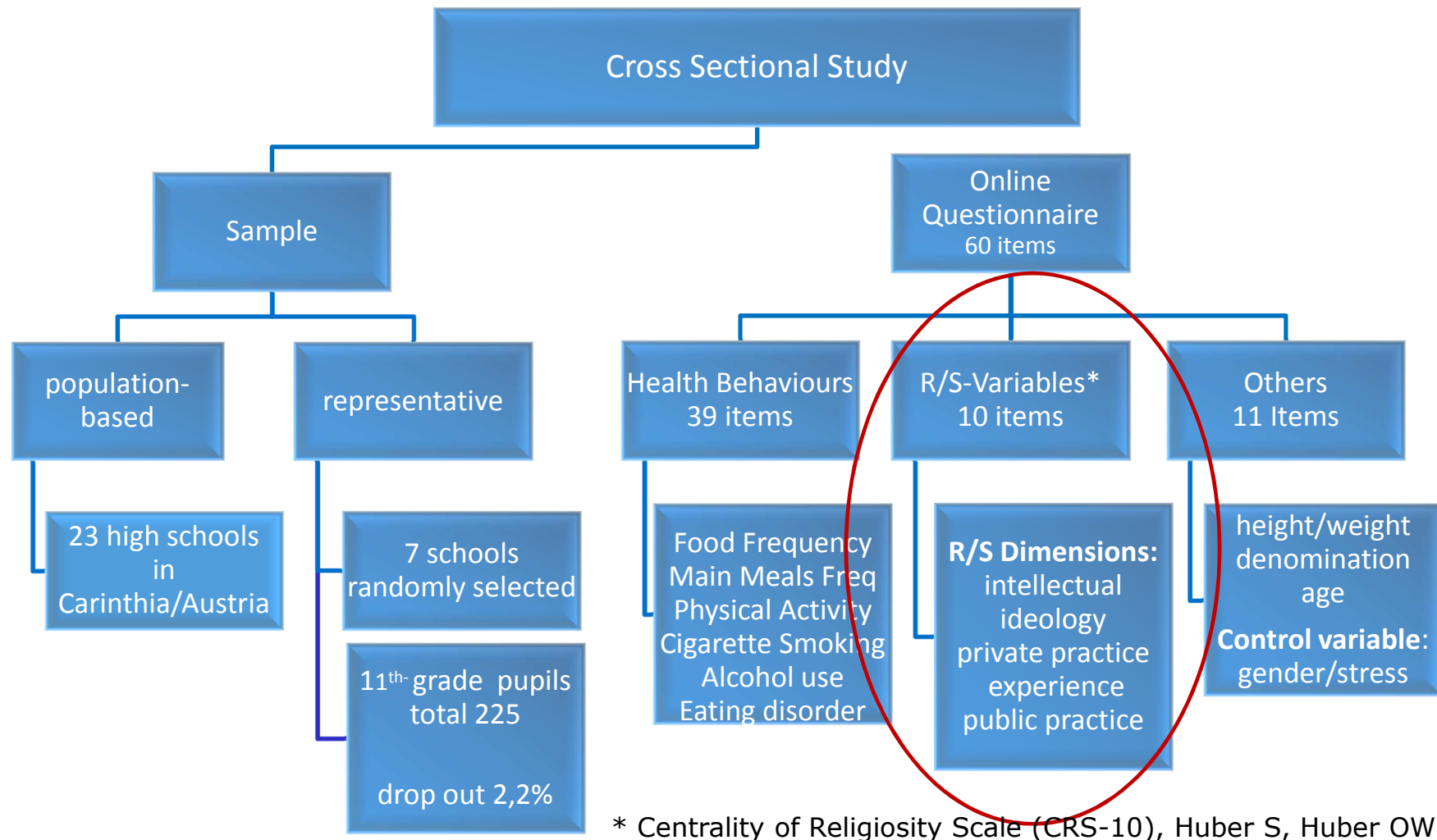




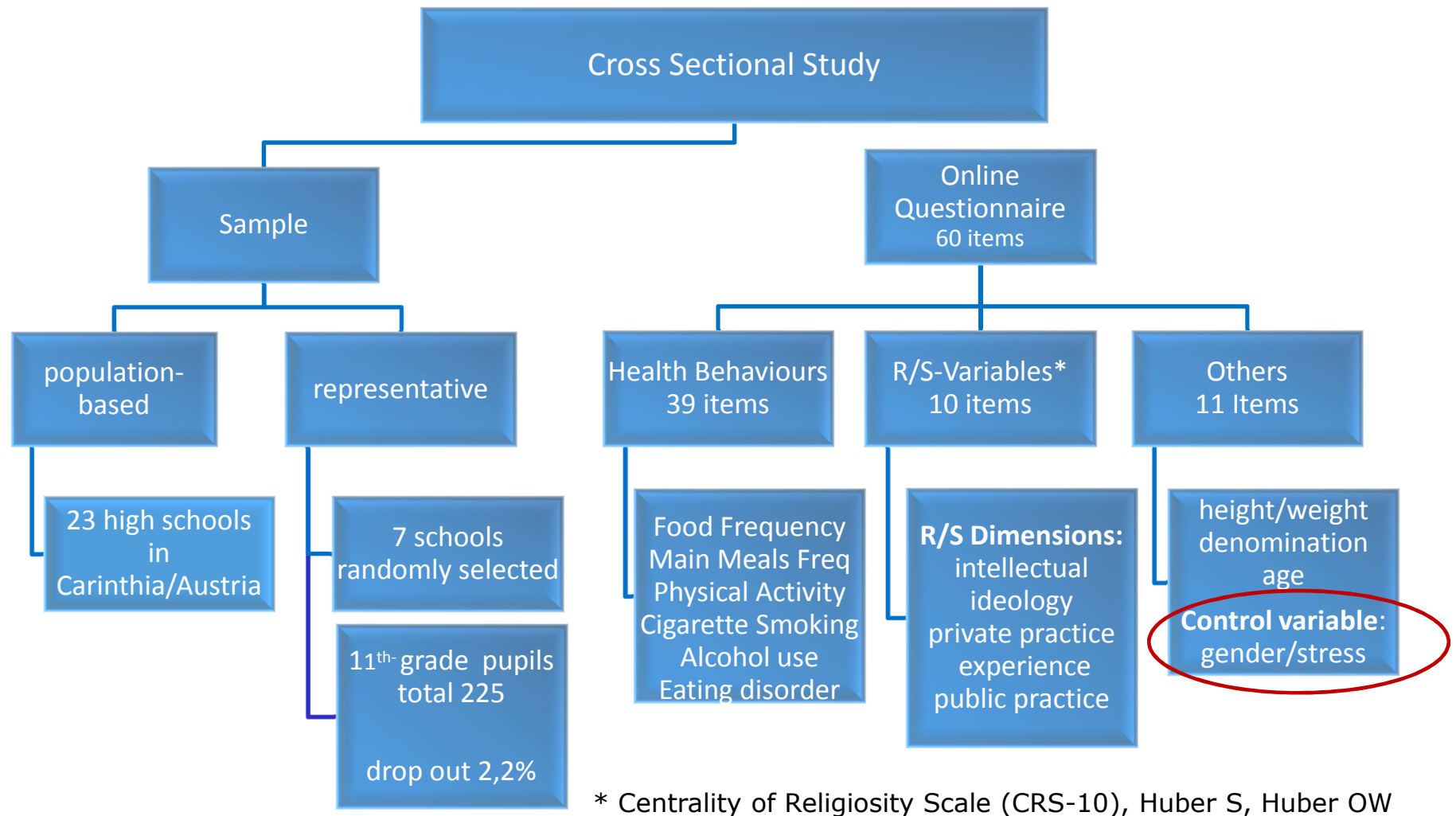
# Methods



# Methods

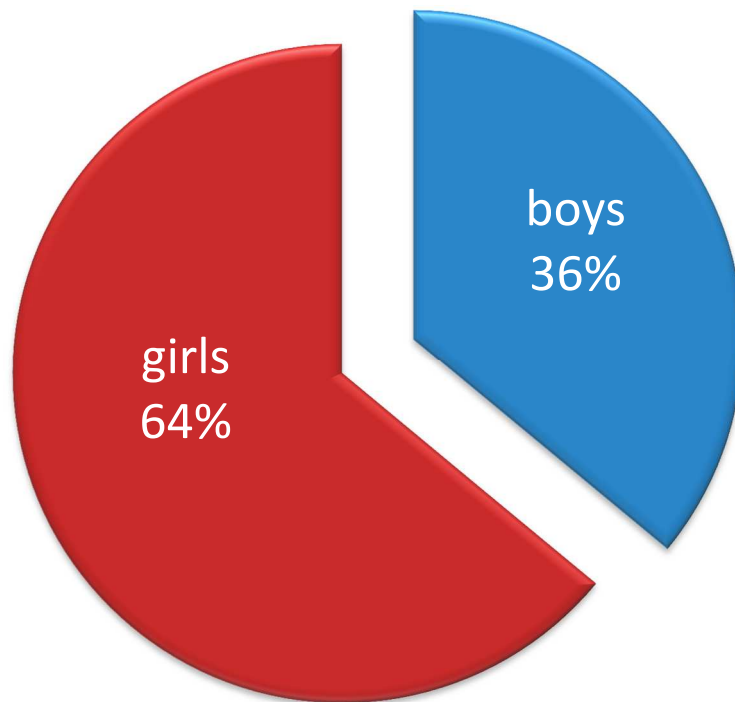


# Methods





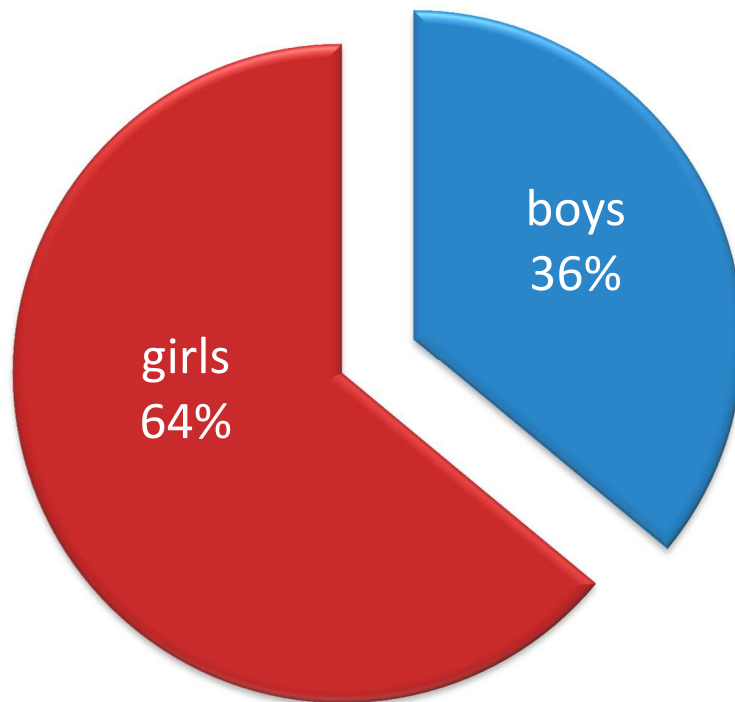
## Gender percentage



n = 220 (♀ = 140; ♂ = 80)



## Gender percentage



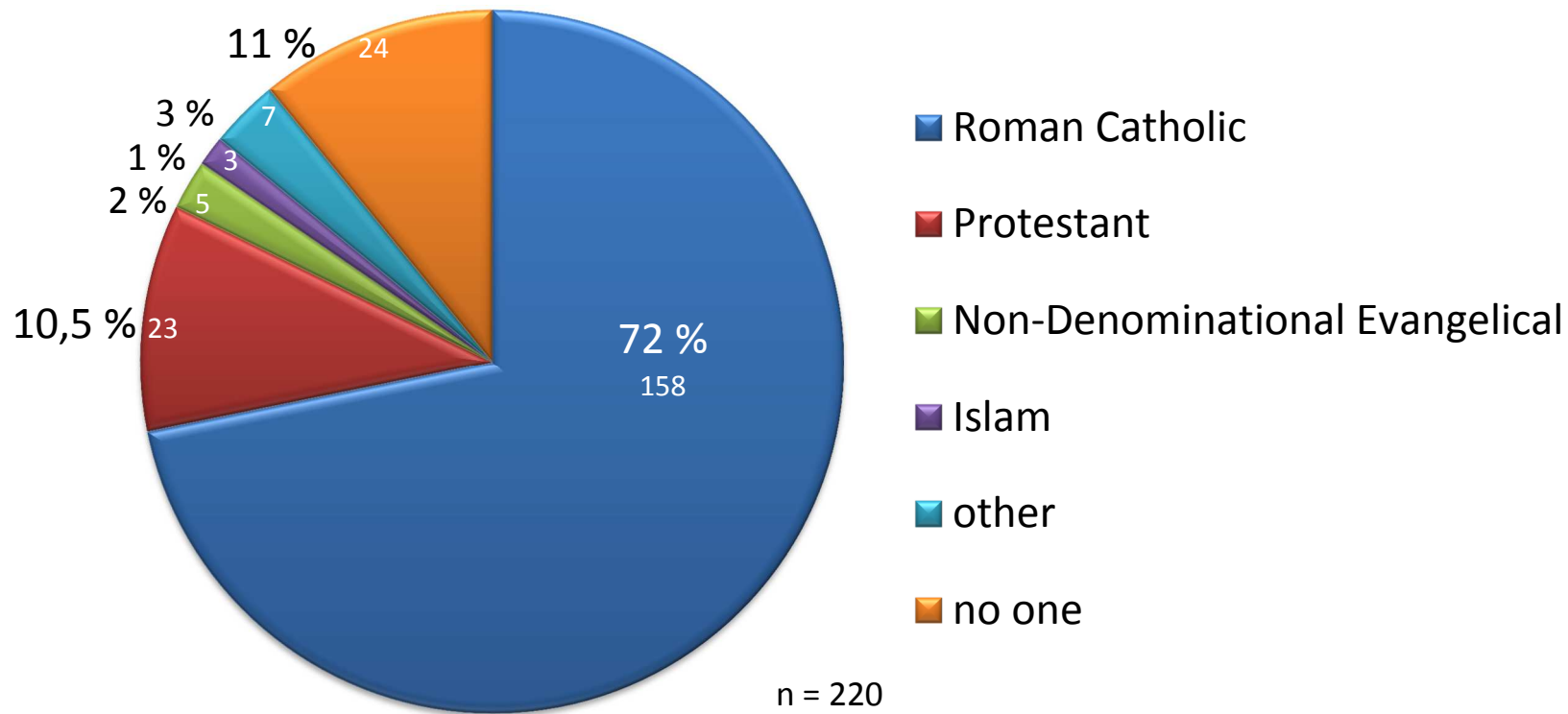
average age 16.4 years  
range 15[n=1] to 18[n=16]

n = 220 (♀ = 140; ♂ = 80)

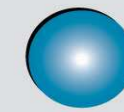
# Results - Sample



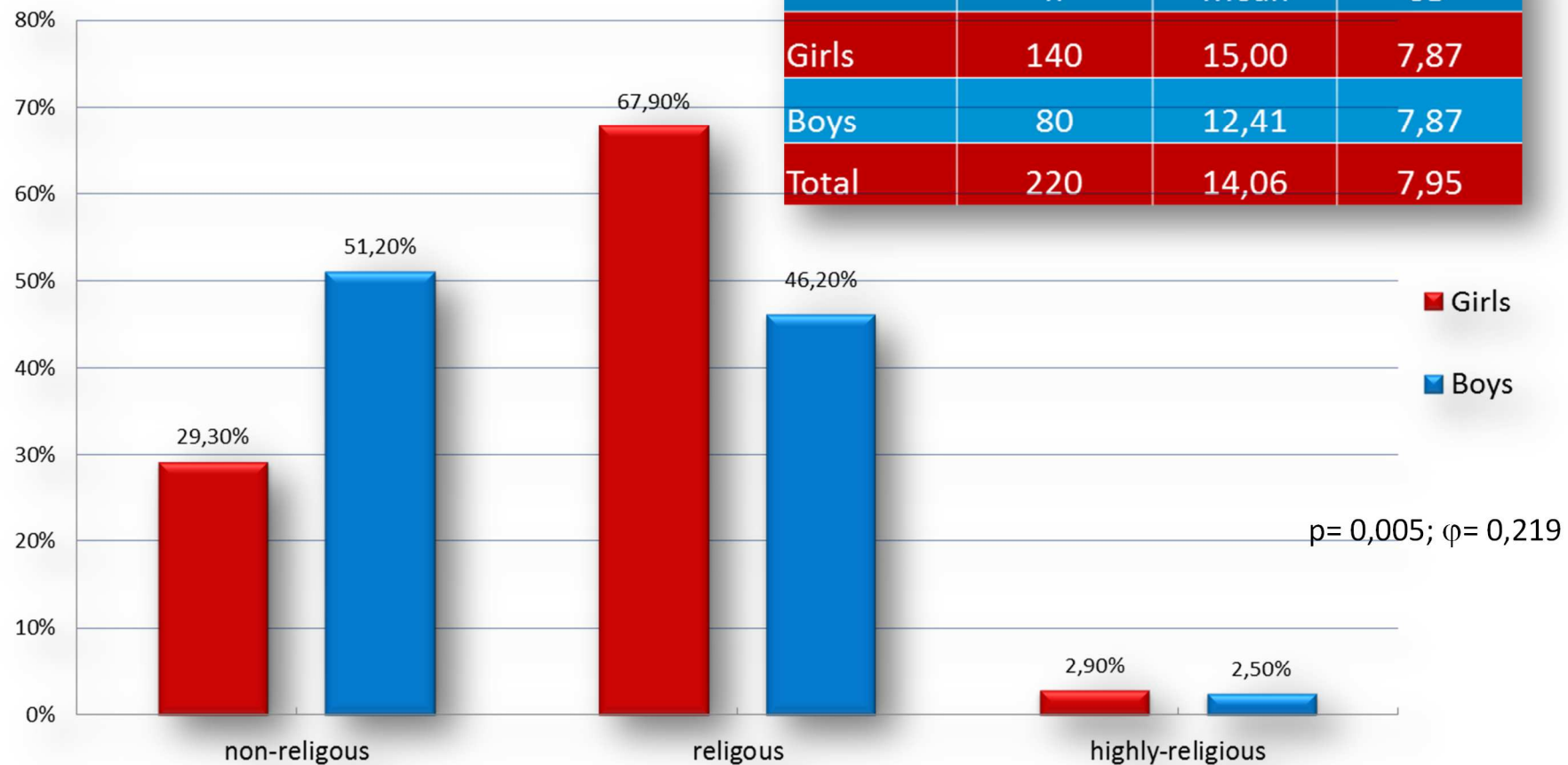
## Denomination



# Results – R/S



## Categorical Centrality Groups by Gender

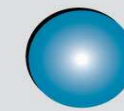


## CRS-Score (value 0-40) by Gender Mean and standard deviation

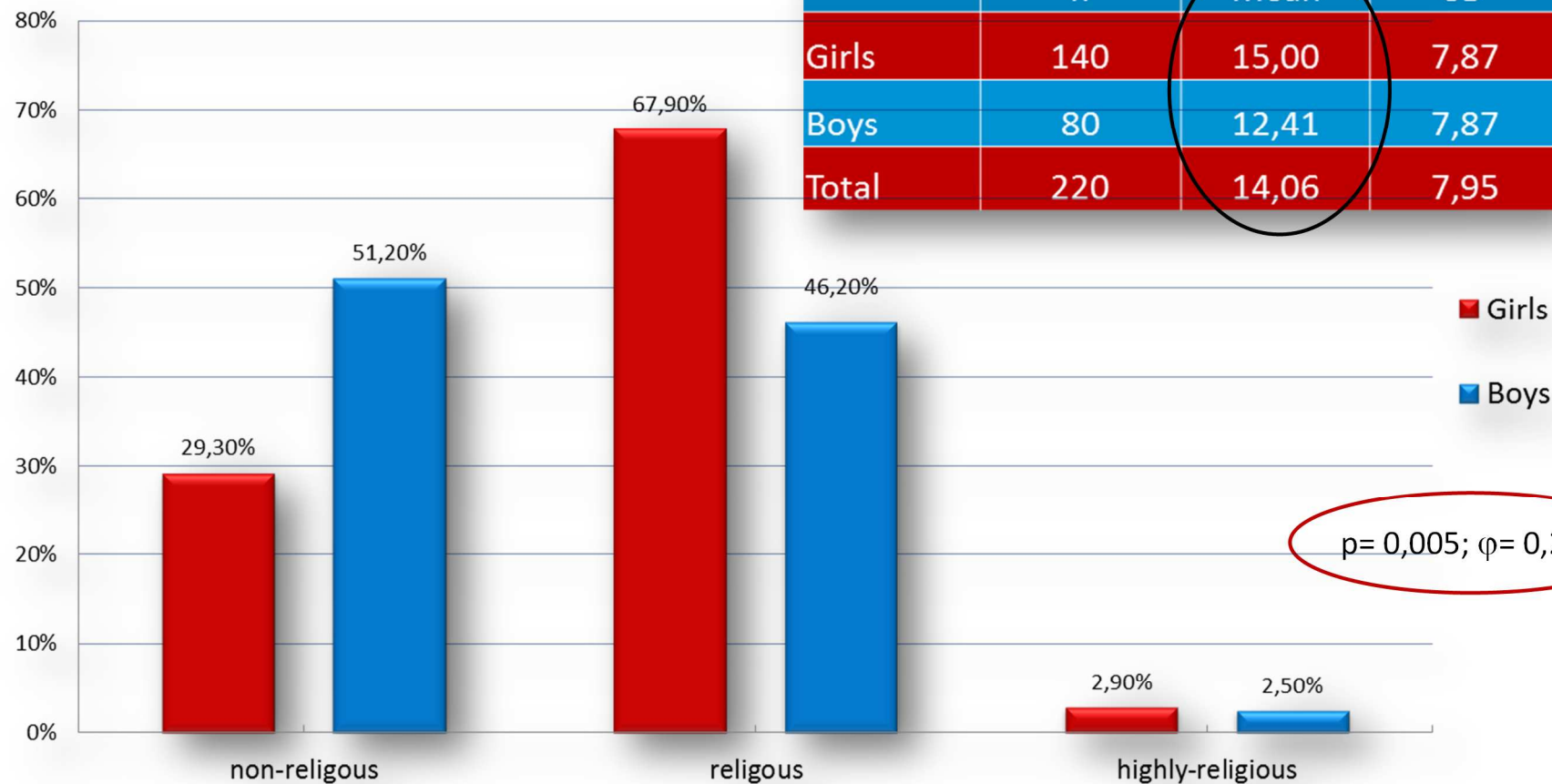
	n	Mean	SD
Girls	140	15,00	7,87
Boys	80	12,41	7,87
Total	220	14,06	7,95



# Results – R/S



## Categorical Centrality Groups by Gender



## CRS-Score (value 0-40) by Gender Mean and standard deviation

	n	Mean	SD
Girls	140	15,00	7,87
Boys	80	12,41	7,87
Total	220	14,06	7,95

$p = 0,005$ ;  $\varphi = 0,219$

# Results – Correlations



## Spearman Correlations

	RS-C-Score	RS-intellect.	RS-ideology	RS-private pr.	RS-experience	RS-public pr.	Stress-Score
Positive-Food Freq-Score	0,07	0,072	-0,018	0,09	-0,026	,144*	0,071
Negative-Food Freq-Score	-0,104	-0,032	-0,025	<b>-,161*</b>	-0,02	-0,119	- 0,007
<b>Total-Food Freq-Score</b>	<b>,141*<sup>P</sup></b>	0,078	0,03	<b>,179**</b>	0,023	<b>,138*</b>	0,007
<b>Main Meal-Freq Score</b>	<b>,135*</b>	<b>,140*</b>	0,076	0,068	<b>,135*</b>	0,094	<b>-,140*</b>
<b>Scoff-Score (ED)</b>	0,122	0,009	0,045	<b>,203**</b>	0,06	0,118	<b>,177**</b>
<b>Smoking Frequency</b>	<b>-0,124<sup>g</sup></b>	-0,029	-0,085	-0,131	-0,111	-0,077	<b>,164*</b>
<b>Smoking Cig. Number</b>	<b>-,480**</b>	-0,13	<b>-,298*</b>	<b>-,459**</b>	<b>-,403**</b>	<b>-,461**</b>	0,085
<b>Drunkenness Freq.</b>	<b>-,285**</b>	-0,101	<b>-,195**</b>	<b>-,296**</b>	<b>-,231**</b>	<b>-,195**</b>	0,093
<b>Phys Activity Frequency</b>	<b>0,025<sup>b</sup></b>	0,031	-0,019	-0,034	0,086	0,052	<b>-,114*</b>
<b>Phys Activity Duration</b>	0,043	0,034	-0,04	0,016	0,071	0,121	- 0,042

RS (C) = Religion /Spirituality (Centrality); ED = Eating disorder

\*\* The correlation is significant for  $p < 0.01$

\* The correlation is significant for  $P < 0,05$

<sup>P</sup> Pearson correlation

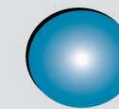
<sup>b</sup> The correlations is significant in boys ( $,256^*$ )

<sup>g</sup> The correlations is significant in girls ( $-,202^*$ )

**n = 220**

Except Smoking Cig. Number: n=67

# Results – Correlations



## Spearman Correlations

	RS-C-Score	RS-intellect.	RS-ideology	RS-private pr.	RS-experience	RS-public pr.	Stress-Score
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# Results – Correlations



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Except Smoking Cig. Number: n=67

# Results – Regressions analysis



## Binary Logistic Regression – **Drunkness Frequency** with Control- und Correlating Health Behaviour Variables

Health Behaviour Categories	Abbreviation
<b>Fruit and vegetable consumption</b>	Fruit/Veg.
0 = at least once a day fruit or veg.	
1 = neither fruit nor veg. daily	
<b>Main meal frequency</b>	MMF
0 = at least 2 MM or more daily	
1 = less than 2 MM daily	
<b>Physical activity</b>	activity
0 = at least 3 times a week	
1 = less than 3 times a week	
<b>Drunkness frequency</b>	drunk
0 = never or only once in life	
1 = more than once	
<b>Cigarette smoking number daily</b>	smoking N
0 = less than 2 C daily	
1 = 2 or more C daily	
<b>Cigarette smoking frequency</b>	smoking F
0 = Non smoker	
1 = smoker	
<b>Eating disorder (scoff-score)</b>	ED
0 = no suspicion of ED	
1 = suspicion of ED	



# Results – Regressions analysis



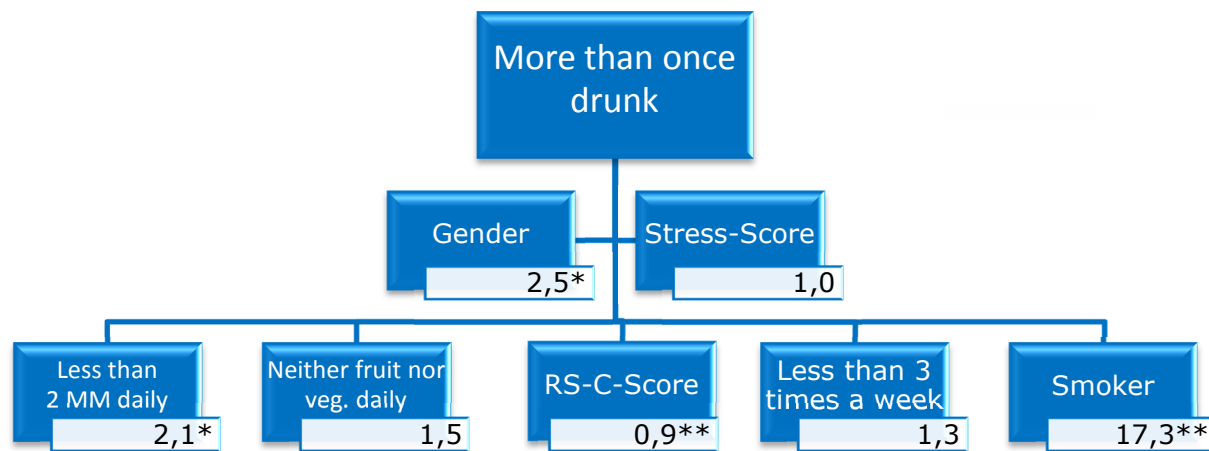
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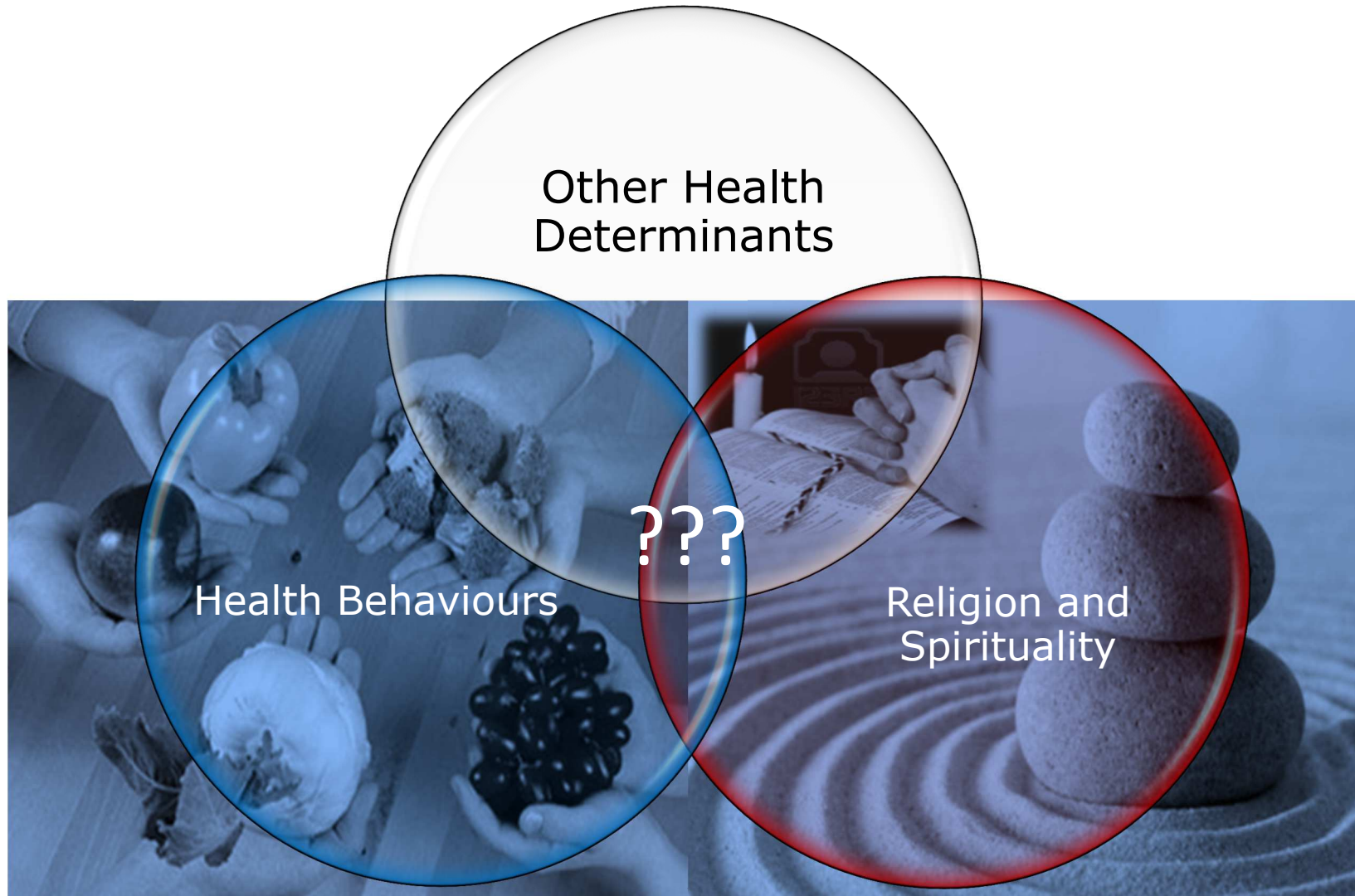
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n = 220

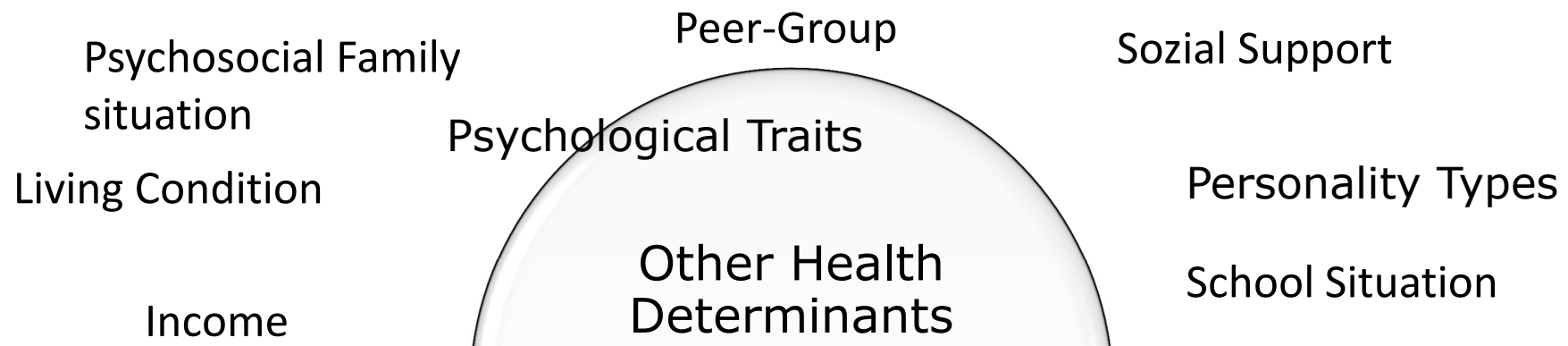
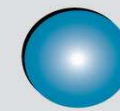
Health Behaviour Categories	Abbreviation
<b>Fruit and vegetable consumption</b>	Fruit/Veg.
0 = at least once a day fruit or veg.	
1 = neither fruit nor veg. daily	
<b>Main meal frequency</b>	MMF
0 = at least 2 MM or more daily	
1 = less than 2 MM daily	
<b>Physical activity</b>	activity
0 = at least 3 times a week	
1 = less than 3 times a week	
<b>Drunkness frequency</b>	drunk
0 = never or only once in life	
1 = more than once	
<b>Cigarette smoking number daily</b>	smoking N
0 = less than 2 C daily	
1 = 2 or more C daily	
<b>Cigarette smoking frequency</b>	smoking F
0 = Non smoker	
1 = smoker	
<b>Eating disorder (scoff-score)</b>	ED
0 = no suspicion of ED	
1 = suspicion of ED	

Nagelk. R2	Variables	Sig.	Odds Ratio	95% Confidence Interval	
<b>,382</b>	<b>MMF</b>	<b>,057</b>	<b>2,1</b>	<b>0,98</b>	<b>4,51</b>
	Fruit/Veg	,201	1,5	0,79	2,98
	<b>RS-C-Score</b>	<b>,008</b>	<b>0,9</b>	<b>0,90</b>	<b>0,98</b>
	Activity F	,459	1,3	0,66	2,53
	<b>Smoking F</b>	<b>,000</b>	<b>17,3</b>	<b>6,23</b>	<b>48,01</b>
	Stress-Score	,941	1,0	,89	1,10
	Gender	,012	2,5	1,23	5,30

# Discussion – Limitation



# Discussion – Limitation





# Conclusion



- This study shows that religion/spirituality is positively associated with several beneficial health behaviours.
- The role of religion/spirituality in health behaviours should not be ignored.
- Further studies are needed to explore the influence of other confounding or mediating variables on this association. This should include socioeconomic status, family dynamics, social influence, peer group and personality types.
- Surveys investigating health behaviours among adolescents should include questions on religion/spirituality.



# Conclusion



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- Surveys investigating health behaviours among adolescents should include questions on religion/spirituality.





## ● Sources of pictures

[http://das-ist-drin.de/blog/uploads/TricksfuerGemuese\\_5-am-Tag.jpg](http://das-ist-drin.de/blog/uploads/TricksfuerGemuese_5-am-Tag.jpg)

<http://us.123rf.com>

[http://www.flw-wiesbaden.de/res/img/cdb4e92b95b7/  
1194.meditationzen1.jpg](http://www.flw-wiesbaden.de/res/img/cdb4e92b95b7/1194.meditationzen1.jpg)



# Results – Correlations



## Spearman Correlations

	Positive-FF-Score	Negative-FF-Score	Total-FF-Score	MF-Score	Scoff-Score	Smoking F	Smoking N	Drunk
Negative-FF-Score	-,374**							
Total-FF-Score	,752**	-,810**						
MF-Score	,166*	0,069	0,053 <sup>b</sup>					
Scoff-Score (ED)	0,097 <sup>b</sup>	-,274**	,210**	-,234**				
Smoking Frequency	-0,055	0,009	-0,064	-,259**	,141*			
Smoking Cig.Number	-0,198	,284*	-,337**	-,403**	-0,001	,887**		
Drunkenness Frequ.	-0,102	,158*	-,189**	-,215**	0,072 <sup>g</sup>	,522**	,576**	
Activity Frequency	,242**	-0,06 <sup>g</sup>	,161*	,212**	-0,011	-,176**	-0,079	-,133*
Activity Duration	,325**	-0,038 <sup>g</sup>	,185**	,170*	-0,035	-0,072	-0,12	-0,073 <sup>g</sup>

FF = Food Frequency; MF = Meal Frequency; ED = Eating disorder

\*\* The correlation is significant for  $p < 0.01$

\* The correlation is significant for  $P < 0,05$

<sup>b</sup> The correlations is significant in boys ; <sup>g</sup> The correlations is significant in girls

**n = 220**

Except Smoking Cig. Number: n=67