

Exploring the Relationship between Burden Factors and Survey Response

*DC-AAPOR Workshop on Respondent Burden
October 21, 2019*

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Overview

- Respondent Burden
- Current Population Survey
 - ▶ CPS Supplements
- Structural Equation Models
- Conclusions
- Limitations
- Next Steps



Respondent Burden

- In Bradburn's (1978) model respondent burden includes five dimensions:
 - ▶ length of the interview
 - ▶ amount of effort required of the respondent
 - ▶ amount of stress on the respondent
 - ▶ survey topic saliency/importance
 - ▶ frequency with which the respondent is being independently surveyed



Respondent Burden

- In Bradburn's (1978) model respondent burden includes four dimensions:
 - ▶ length of the interview
 - ▶ amount of effort required of the respondent
 - ▶ amount of stress on the respondent
 - ▶ survey topic saliency/importance
 - ▶ frequency with which the respondent is being independently surveyed
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X survey topic saliency/importance (interaction effect)

Current Population Survey (CPS)

- The CPS is a monthly survey conducted by the US Census Bureau and the Bureau of Labor Statistics
- The data are used to produce labor force status estimates
- Several months out of the year, target populations of CPS respondents are asked to complete additional questions referred to as topic specific supplemental surveys
 - ▶ There is concern that additional supplemental surveys may hurt response rates of both the CPS and other annual supplemental surveys



CPS Supplement Population

- Several months out of the year, target populations of CPS respondents are asked to complete additional questions referred to as topic specific supplemental surveys

CPS Sample

CPS Supplement Population

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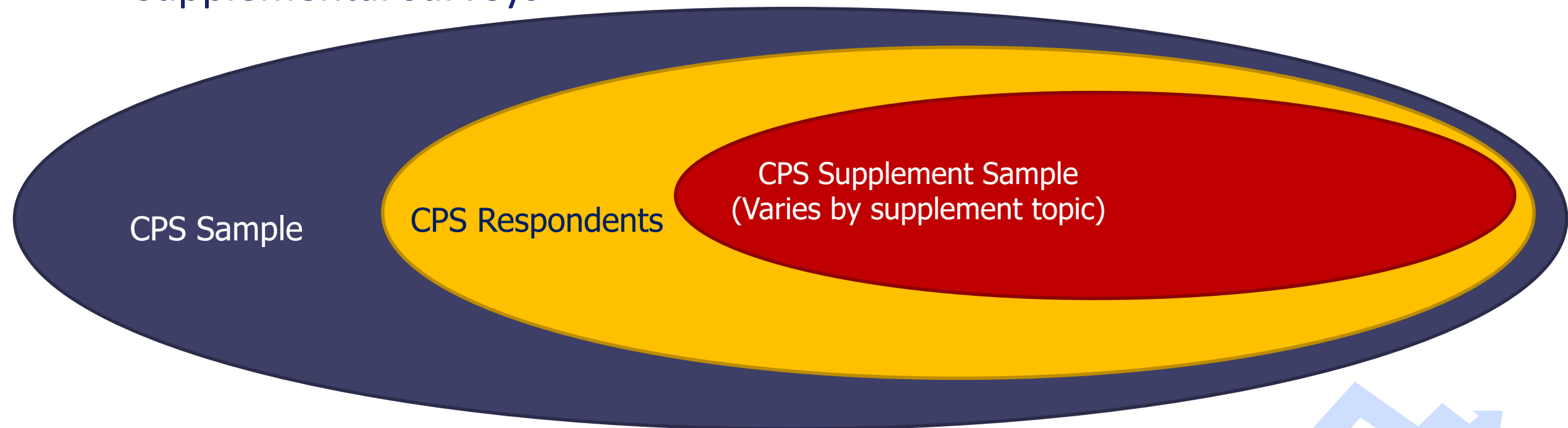
A diagram consisting of two nested ovals. The outer oval is dark blue and contains the text 'CPS Sample'. The inner oval is yellow and contains the text 'CPS Respondents'. The yellow oval is positioned to the right and slightly below the center of the dark blue oval, indicating that respondents are a subset of the sample.

CPS Sample

CPS Respondents

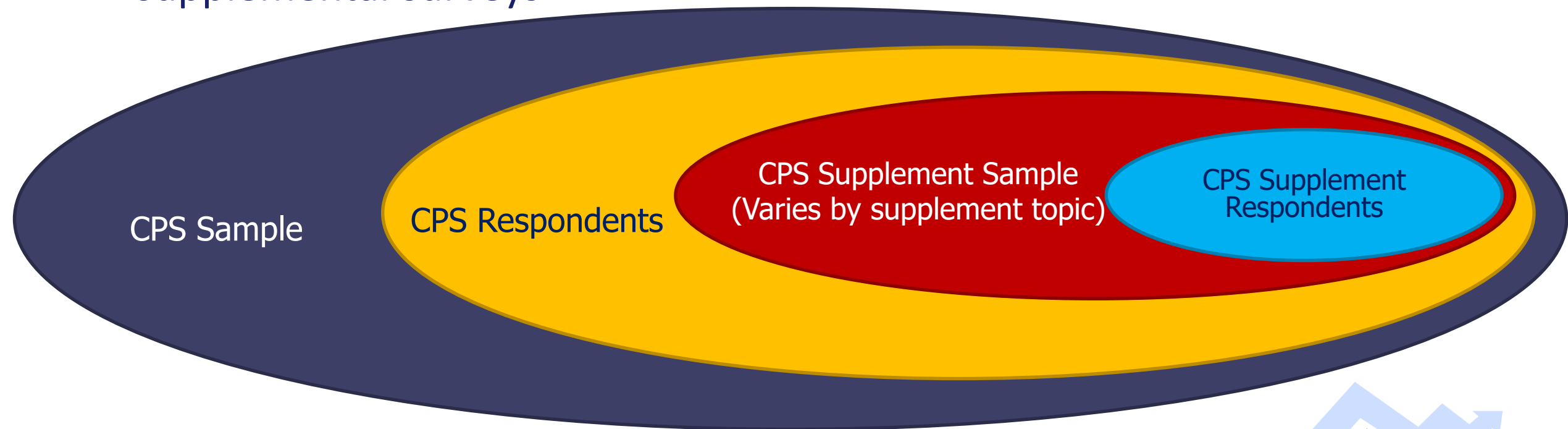
CPS Supplement Population

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CPS Supplements

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CPS Supplements

- Several months out of the year, target populations of CPS respondents are asked to complete additional questions referred to as topic specific supplemental surveys
- The CPS topic specific supplemental surveys are used to collect additional data on issues related to economic and social well being
- Between 2005 and 2015 the CPS had supplemental surveys on about 20 different topics; the frequency of these supplement surveys ranges from once a year to once every two years to a single administration



2016 CPS Supplements Example

- **Displaced Workers & Job Tenure/Occupational Mobility (January) 91.7% RR | CPS Respondent**
 - ▶ Workers who lost a job in the last 3 years
- **Fertility (June) 92.6% RR | CPS Respondent**
 - ▶ Number of children that women aged 15-50 have ever had
- **Veterans (August) 87.4% RR | CPS Respondent**
 - ▶ Veterans of the United States
- **School Enrollment (October) 92% RR | CPS Respondent**
 - ▶ Population 3 years old and older on school enrollment, junior or regular college attendance, and high school graduation
- **Voting and Registration (November) 89.4% RR | CPS Respondent**
 - ▶ Demographic information on persons who did and did not register to vote
- **Food Security (December) 80.1% RR | CPS Respondent**
 - ▶ Food expenditure, access to food, and food quality and safety



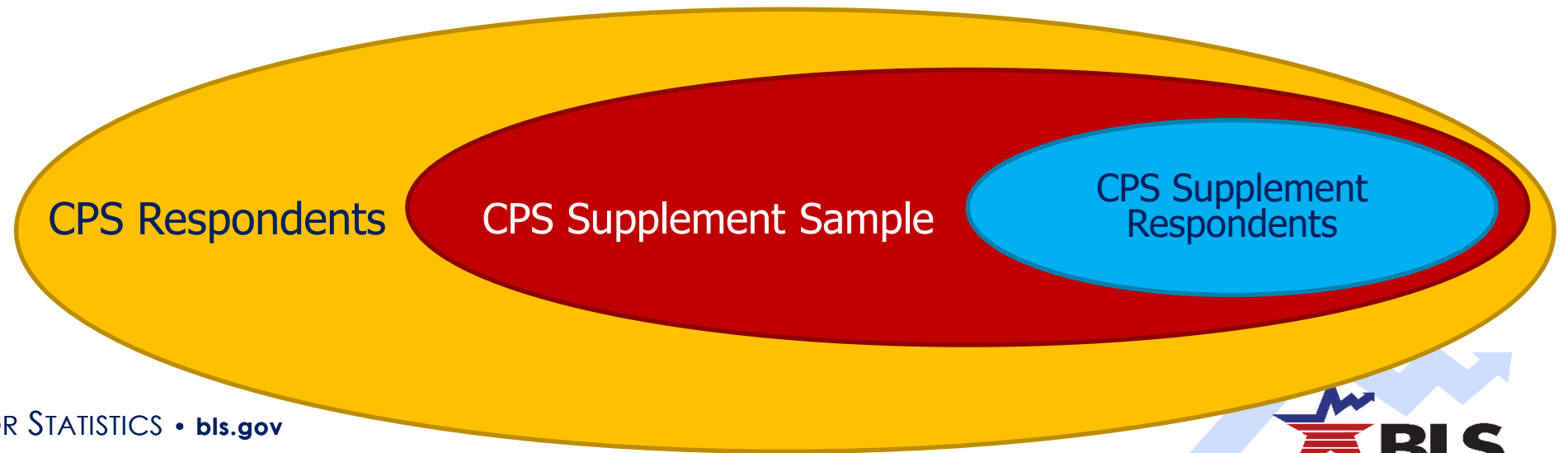
Research Questions

- How are the different factors of respondent burden related to CPS Supplement response rates?
- Does the impact of respondent burden factors vary across different CPS Supplements?
- Does the number of previous supplements a person/household was selected for affect their response to future supplements?



Data

- We used characteristics reported by CPS respondents on the CPS as proxy measures of burden.
- Only CPS respondents are eligible to be sampled for supplements
 - ▶ Therefore the analysis is limited to CPS respondents only



CPS Burden Proxy Items

Bradburn Factors

- Effort

- Stress / Sensitivity

- Length

CPS Items

- # of Adults
- Self, Proxy, or Both
- # of Adults x Self, Proxy, or Both

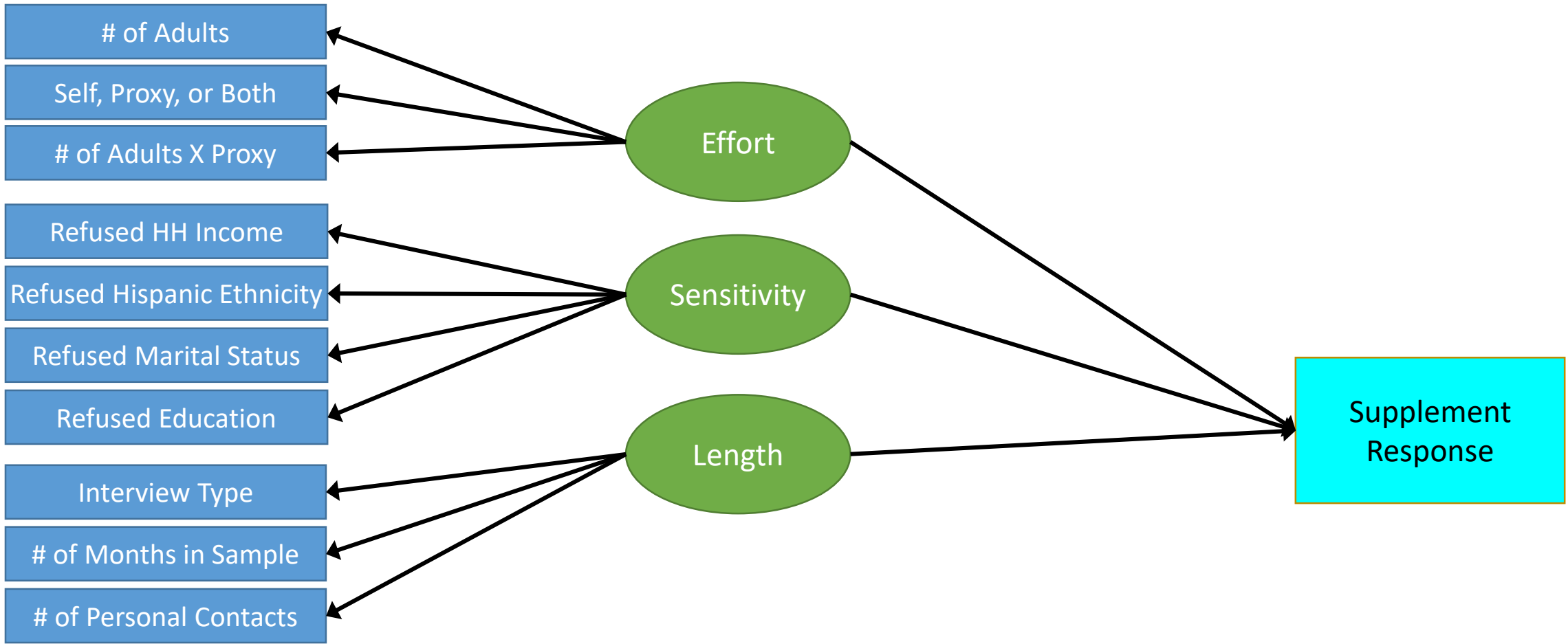
- Refused HH Income
- Refused Hispanic Ethnicity
- Refused Marital Status
- Refused Education

- Interview Type
- # of Months in Sample
- # of Personal Contacts

CPS Burden Proxy Items

Bradburn Factors	CPS Items	Factor1	Factor2	Factor3
■ Effort	■ # of Adults	0.9980	0.0000	-0.0002
	■ Self, Proxy, or Both	1.0000	0.0000	-0.0001
	■ # of Adults x Self, Proxy, or Both	N/A	N/A	N/A
■ Stress / Sensitivity	■ Refused HH Income	0.0000	0.9500	0.0068
	■ Refused Hispanic Ethnicity	-0.0000	0.9822	-0.0020
	■ Refused Marital Status	-0.0007	0.9708	-0.0019
	■ Refused Education	0.0001	1.0000	-0.0001
	■ Interview Type	-0.0059	0.0007	0.9459
■ Length	■ # of Months in Sample	-0.0001	0.0002	1.0000
	■ # of Personal Contacts	-0.0000	0.0216	-0.8920





CPS Supplements & Topic Saliency Indicators

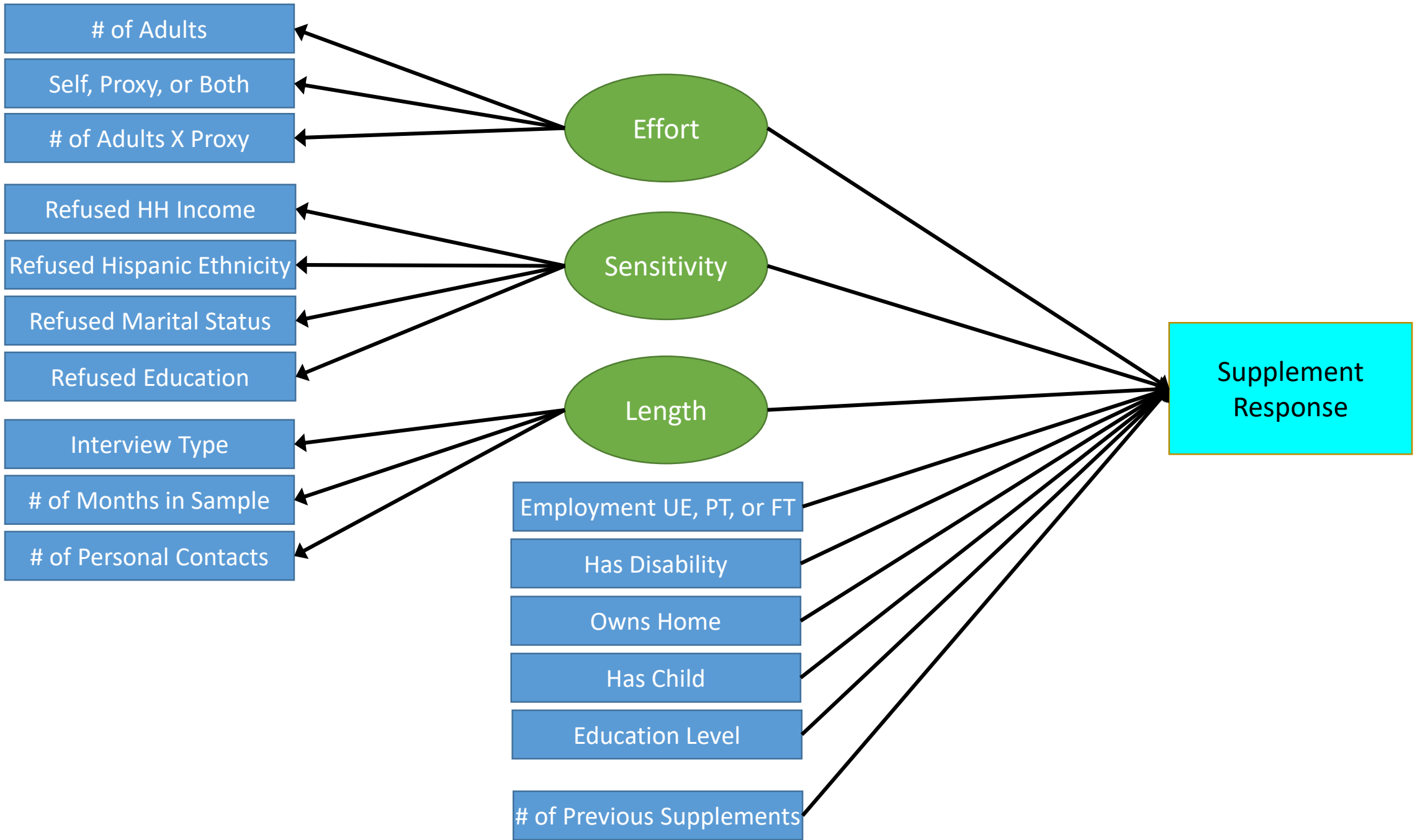
CPS Supplements

- Veterans
- School Enrollment
- Voting and Registration
- Food Security
- Contingent Workers
- Unbanked/Underbanked
- Participation in the Arts
- Volunteering & Civic Life
- Computer & Internet Usage

CPS Saliency Items

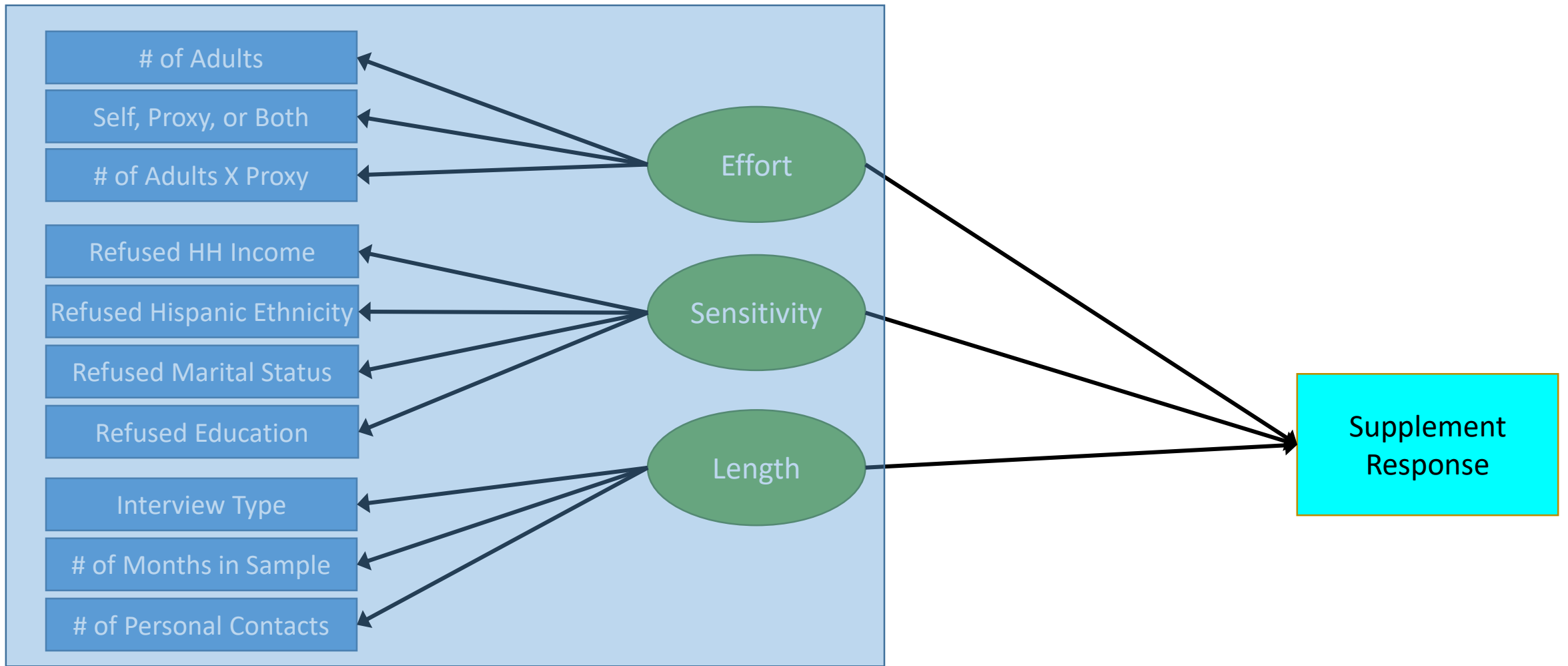
- Employment Status (UE/NILF, PT, or FT)
- Disability Status
- Home Ownership
- Child Status
- Education Level



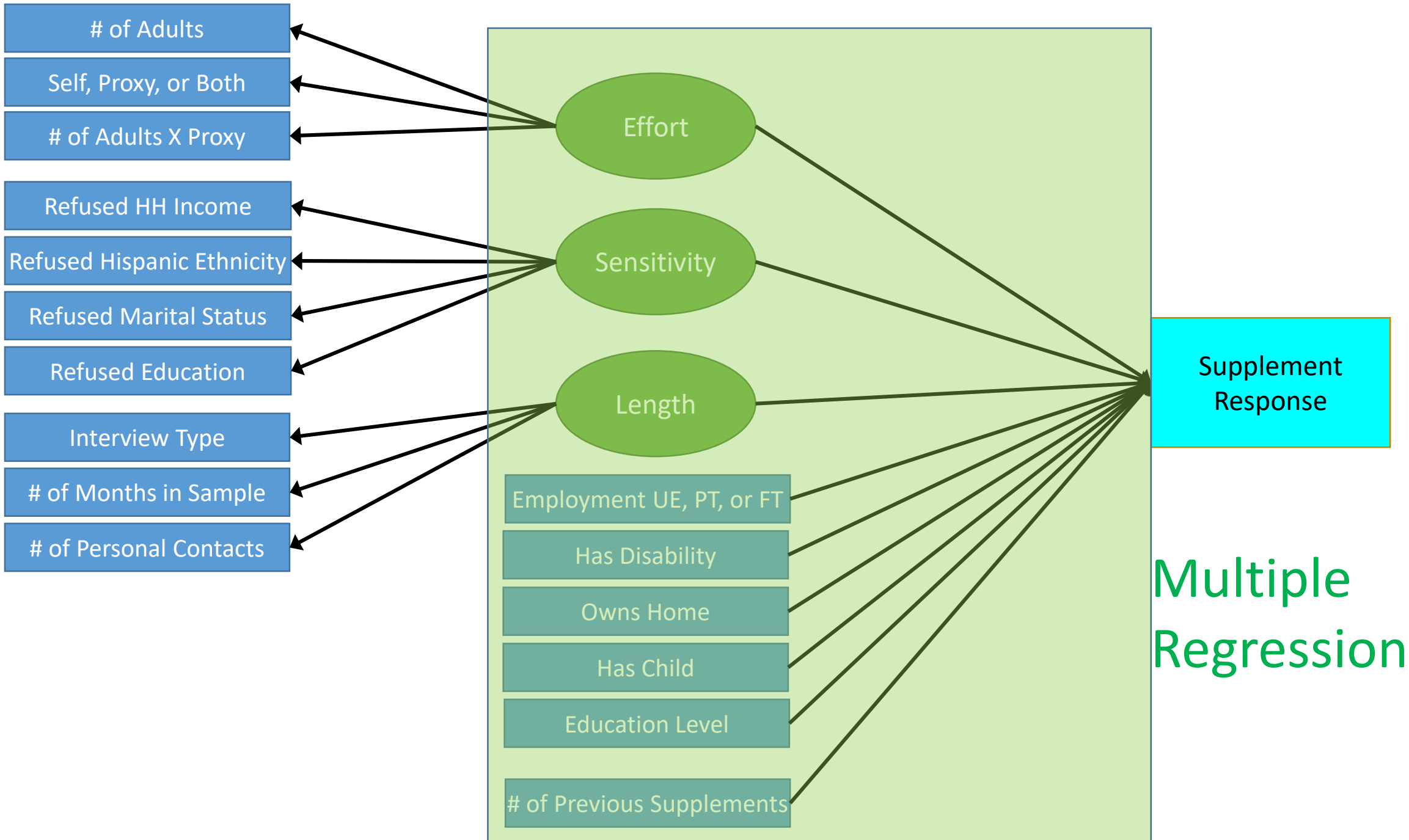


SEM Models

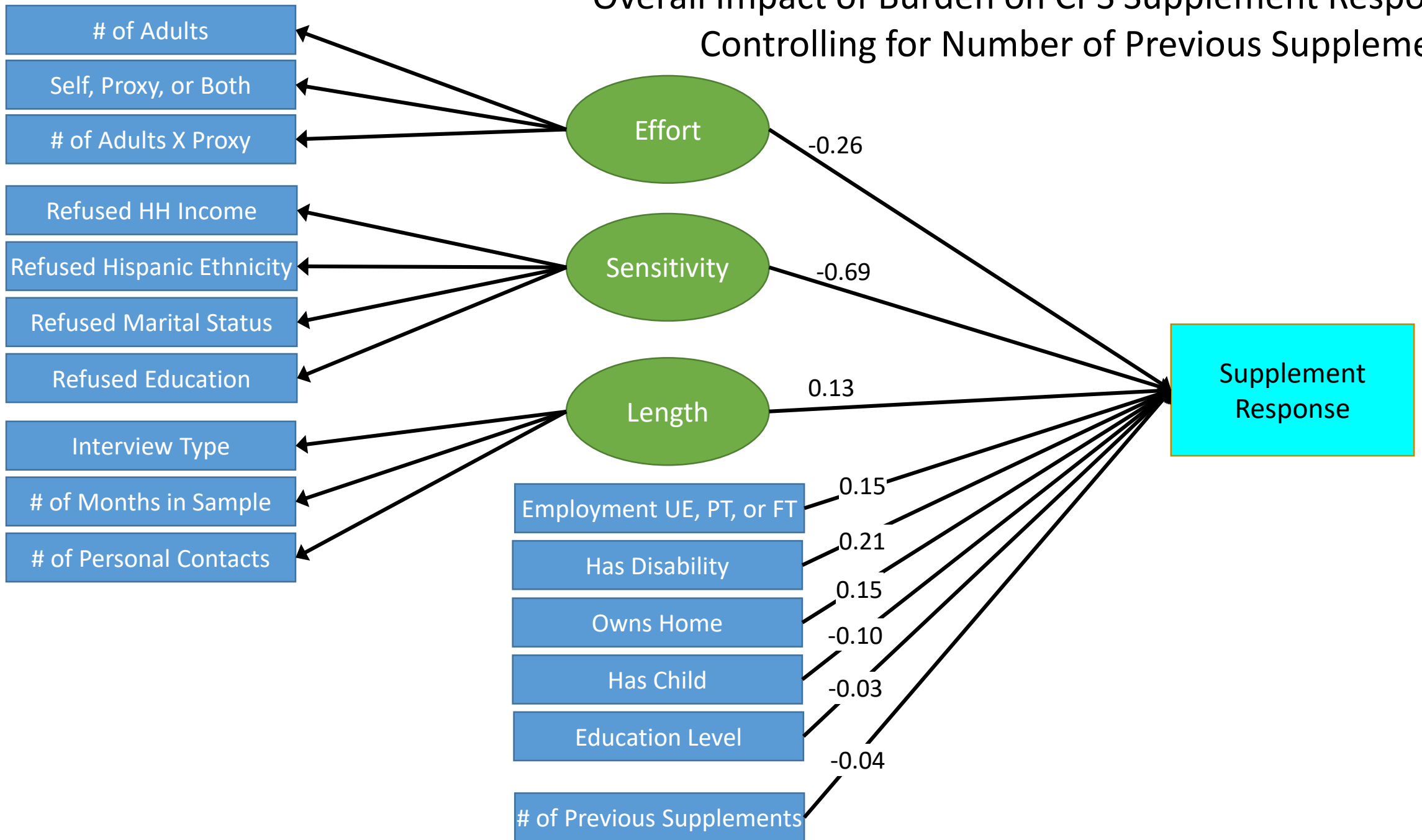
- In order to examine these relationships, we used structural equation modeling and we explored the invariance of item and factor loadings across the nine different CPS supplements
 - ▶ SEM can be thought of as a combination of factor analysis and multiple regression analysis



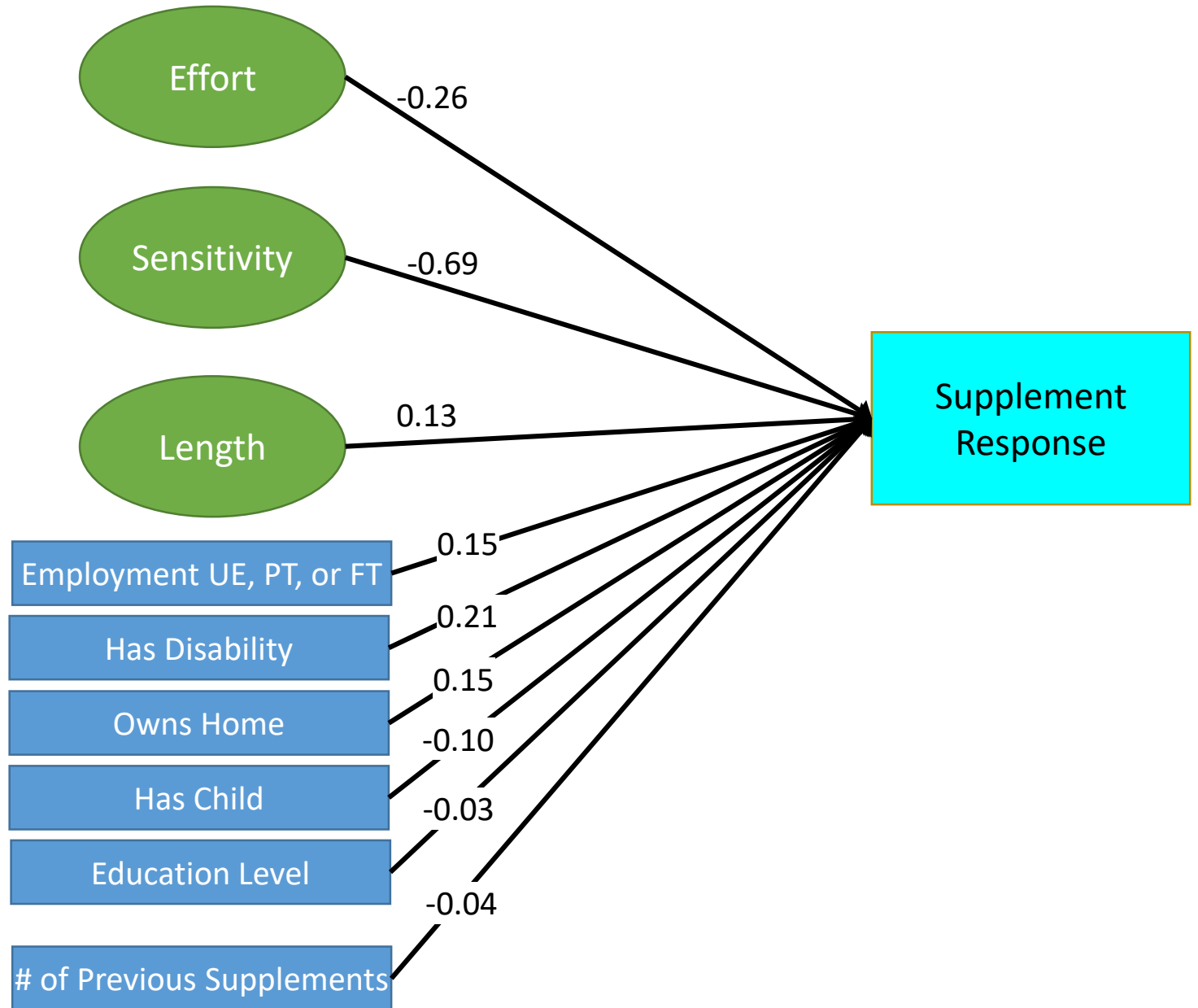
Factor Analysis



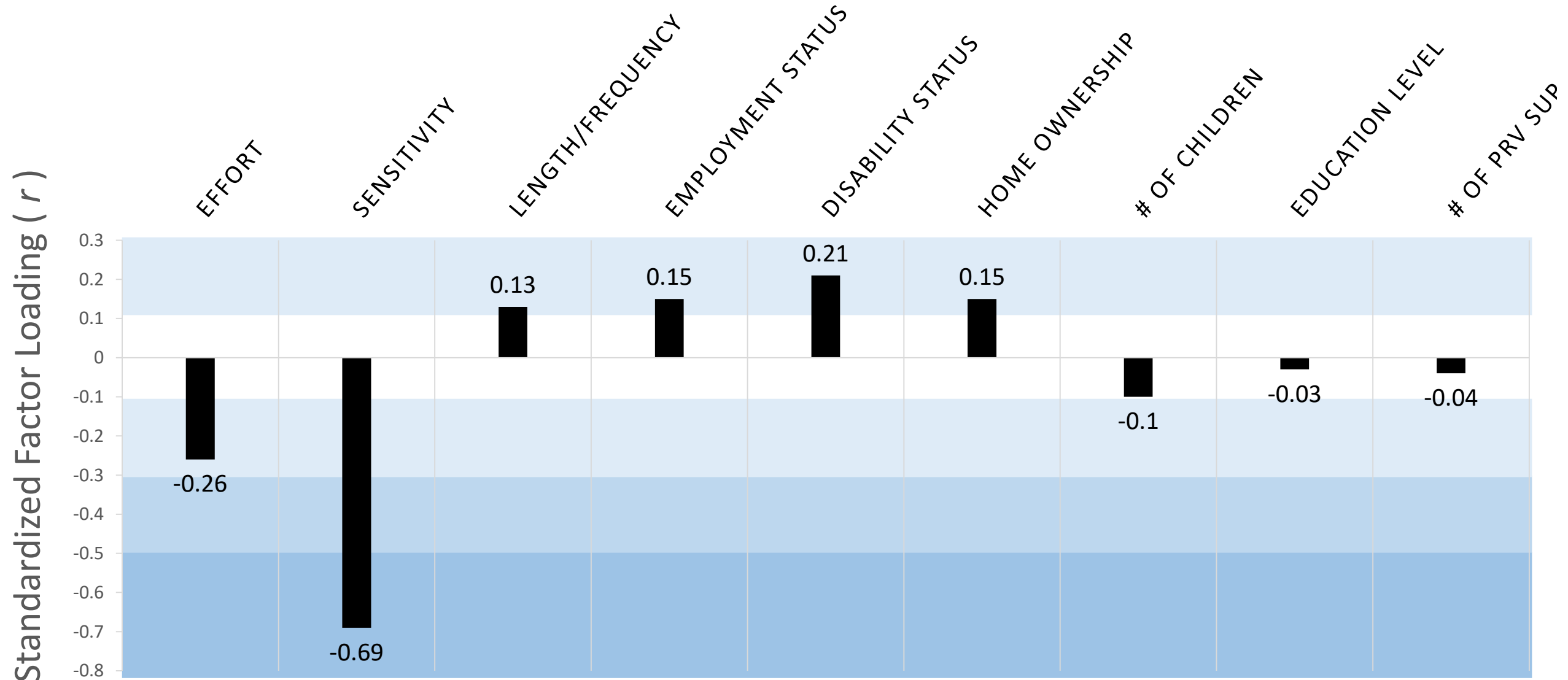
Overall Impact of Burden on CPS Supplement Response Controlling for Number of Previous Supplements

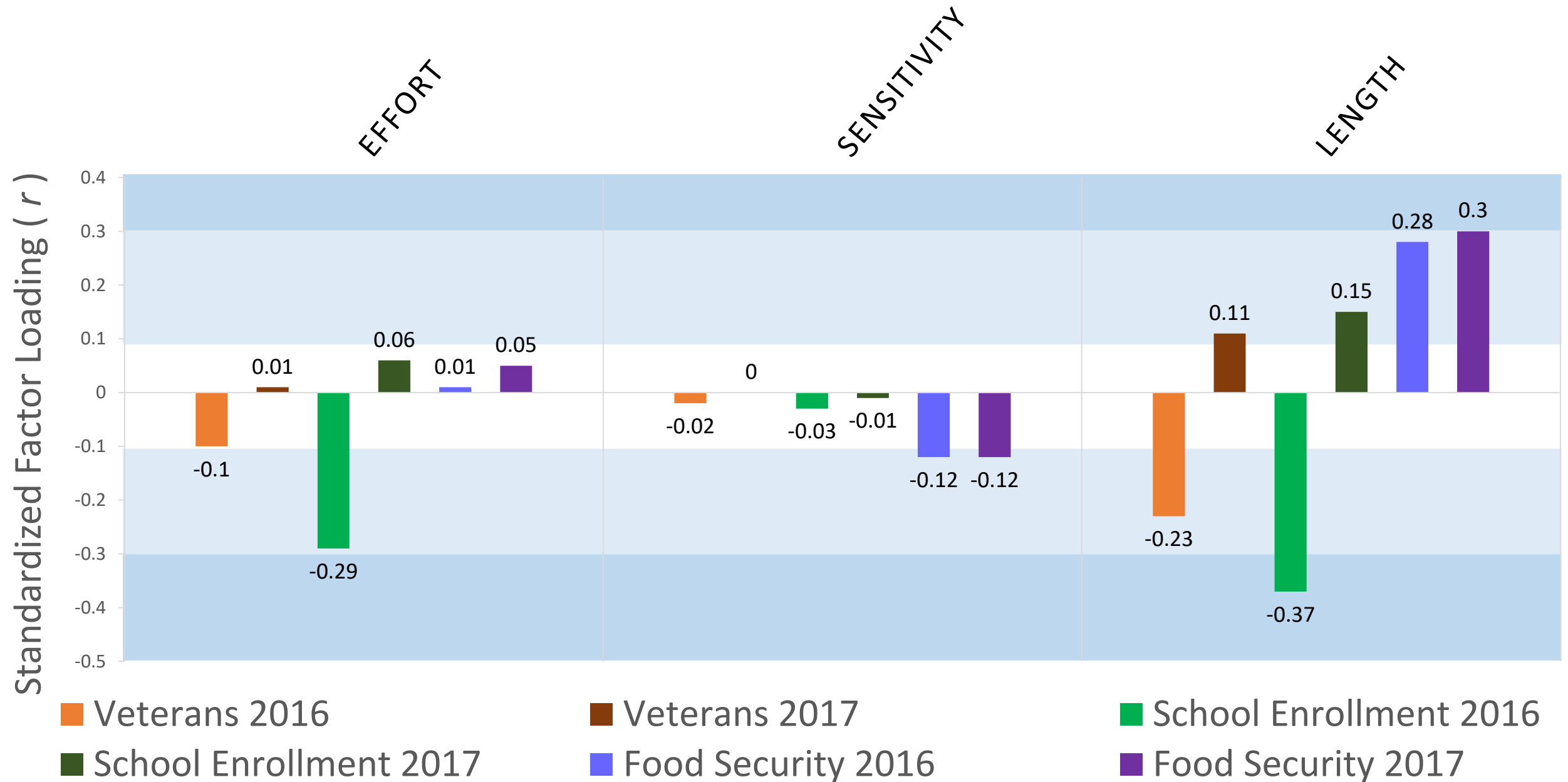


Overall Impact of Burden on CPS Supplement Response Controlling for Number of Previous Supplements

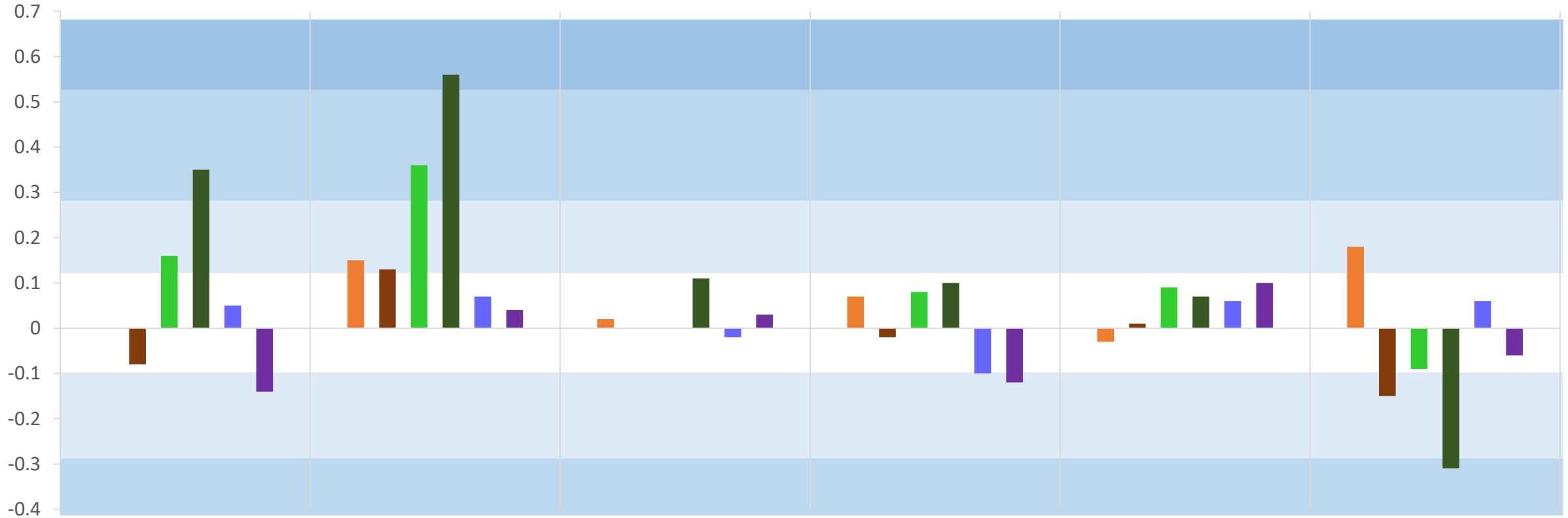


IMPACT OF BURDEN FACTORS, SALIENCY, & SURVEY SAMPLING FREQUENCY ON CPS SUPPLEMENT RESPONSE RATES





Standardized Factor Loading (r)



Veterans 2016

Veterans 2017

School Enrollment 2016

School Enrollment 2017

Food Security 2016

Food Security 2017

Conclusions

- The impact of factor loadings and saliency item loadings varied in strength and direction across the supplements and across years for some supplements
 - ▶ We did see fairly consistent positive effects of education level, disability status, and child status
- Sensitivity had a consistent negative impact on response rates
- The impact of previous supplements varied in direction and strength



Limitations

- Estimation with binary predictors with low frequency (CPS item refusal flags) is difficult, so we were only able to utilize some of the refusal flags in our model.
- Burden is a complex phenomenon, other variables not available in this study might be useful in describing it, specifically those in restricted microdata.
- There are a number of interaction effects that we were not able to test, as well as potential nonlinear effects, issues with missing data, and issues with singularity.



Limitations Cont.

- The fit indices could have been better, but they were not bad (MacCallum et al, 1996; Steiger, 2007)
 - ▶ H0: RMSEA = 0.065
 - ▶ H1: RMSEA = 0.072



Next Steps

- Expand our dataset to include additional supplements over multiple years
- Include panels that receive the March Supplement
- Use the regression tree rpsm R Package to model CPS Supplement response rates over time, to better assess interactions effects and handle issues with missing data, nonlinear relationships, and singularity
- Model month two through eight CPS response rates for month one CPS respondents using similar proxy data



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