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# Fear of Walking Outdoors

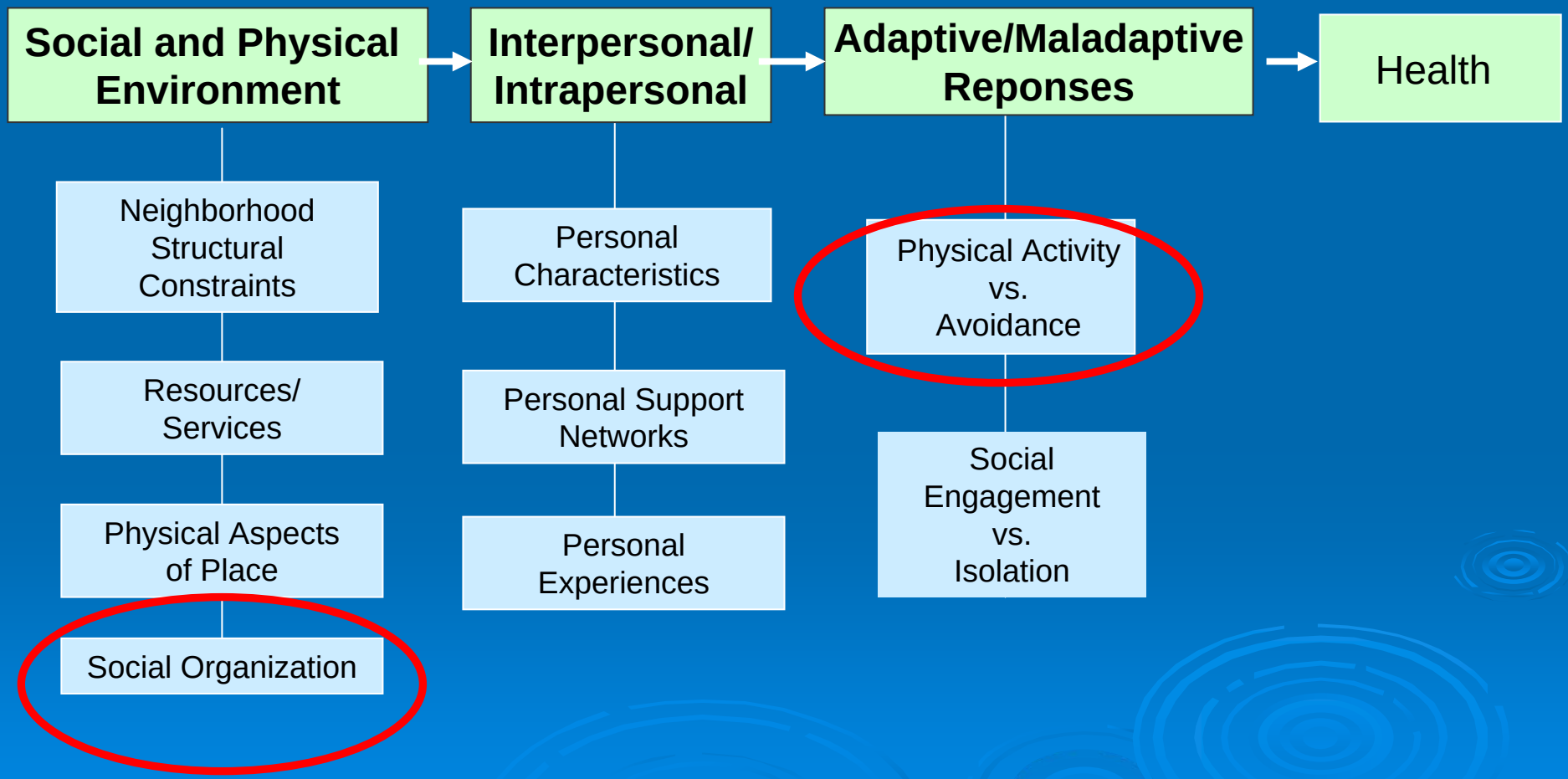
## An Ecological Analysis of Violence and Disorder in Urban Neighborhoods

# Background

- Proliferation of Socio-Ecological Models

  Social Networks + Built Environment ⟹ Active Living
- Crime and disorder often over-looked
- Poor specification of crime constructs
- Unavailability of measures at low levels of aggregation
- Within criminological literature, behavioral responses to fear of crime not well understood

# Socio-Ecological Framework




Adapted from: Glass and Balfour 2003

# Focus on Maladaptive Response

- How often does worry about crime prevent you from walking somewhere in your neighborhood?

# Key Hypotheses

- Neighborhood levels of violence will be positively associated with fear/avoidance of walking
- The presence of gangs (social disorder) will be positively associated with fear/avoidance of walking
- Increased neighborhood cohesion will mediate the impact of violence and gangs on fear/avoidance of walking

# Hypotheses—continued

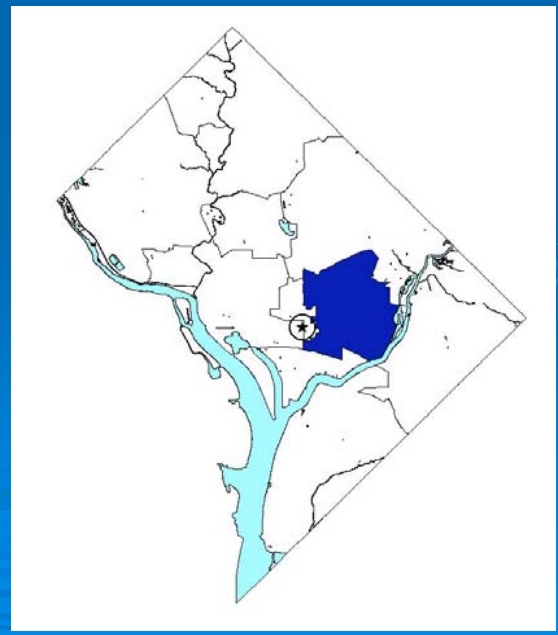
- Relationships will hold true controlling for individual-level factors, physical environment and social environment
- Men and women will be differentially affected by the safety of their environment
- Influence of neighborhood cohesion will vary by race of respondent

# Methods

Design: Cross sectional analysis using multi-level models

Data sources:

- In-person neighborhood survey (2005); Stratified random sample of urban residents within 55 Washington D.C. neighborhoods (N=901); Great variation in socio-demographics across neighborhoods
  - Response rate 67%
- Neighborhood-level = block group
- 2000 Census data linked to individual level
- Planning and land use data
- Law enforcement data



# Dependent Measure

- How often does worry about crime prevent you from walking somewhere in your neighborhood?

  (a) never/rarely (b) sometimes (c) often

# Independent Measures (1)

- Age, gender, race (black), percent of lifetime living in same house, friendship/kinship ties
- Crime and disorder:
  - officially reported violent crime (average of 2004-05);
  - law enforcement intelligence data on location and number of gangs
- Physical environment:
  - percent of block group comprised of parkland
  - percent of parcels that are vacant

# Independent Measures (2)

- Neighborhood structural constraints:
  - Concentrated disadvantage (poverty, female headed households, unemployment, welfare)
  - residential stability (time in home, homeowner)
  - racial heterogeneity
- Collective efficacy: social cohesion and informal social control

# Statistical Analysis

- Multi-level Models
  - Account for clustering of residents within neighborhoods
  - Assess how neighborhood level constructs interact with personal characteristics
  - STATA GLLAMM procedure ordered logit--Estimating the odds of predictors increasing fear one category

# Statistical Analysis (2)

- Level 1 (Individual)
  - Age, gender, race, percent of lifetime living in same house, friendship/kinship ties
- Level 2 (Block Group)
  - Violent crime; number of gangs
  - Percent parkland; percent vacant parcels
  - Concentrated disadvantage, residential stability, racial heterogeneity
  - Neighborhood collective efficacy/”cohesion”

# Statistical Analysis (3)

- Cross-level interactions
  - Gender*levels of violence
  - Race*neighborhood collective efficacy

# Results: Avoidance of Walking Outside Due to Fear of Crime

- Significant individual-level variables:
  - Age: Increase in 10 yrs increases odds of moving up a level in fear by 20%
  - Gender: Women twice as likely to be in higher category
  - Time in Neighborhood: 10% increase in time in neighborhood leads to 7% decrease in odds of being in higher level of fear
  - Kinship ($p<.15$)
    1 SD increase in kinship ties decreases odds of being in higher level by 11%

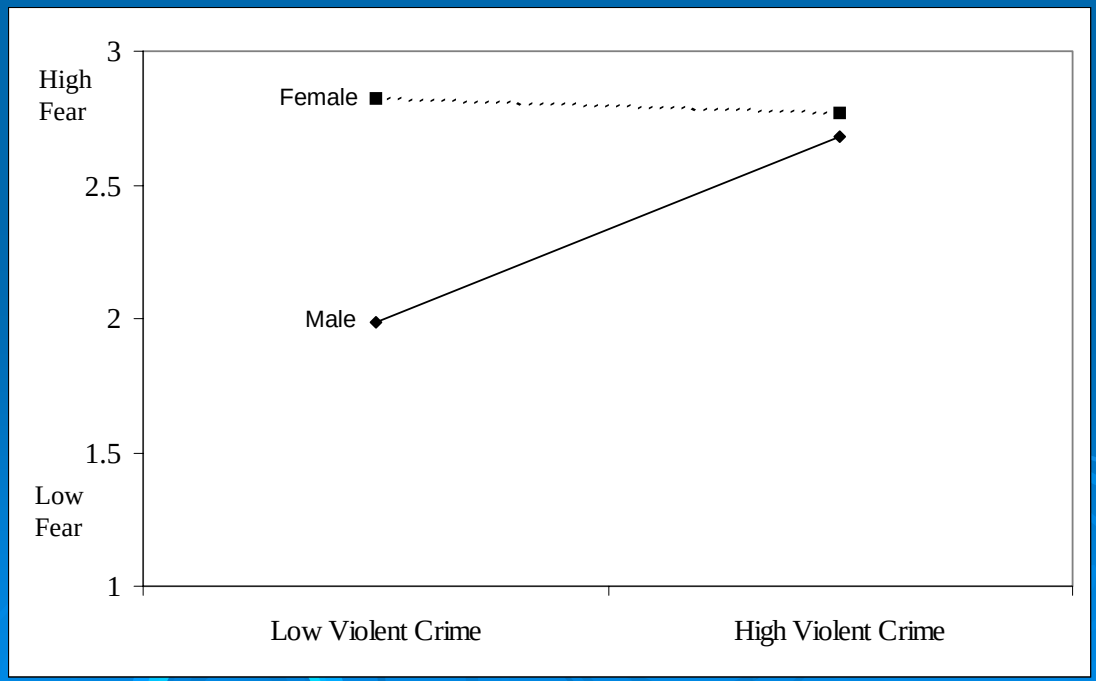
# Results: Avoidance of Walking Outside Due to Fear of Crime

- Significant neighborhood-level variables
  - Number of violent crimes:
    Addition of 10 violent crimes/year increases odds of moving up a level of fear by 20%
  - Concentrated disadvantage ($p < .15$)
    1 SD increase in disadvantage increases the odds of moving up a level of fear by 44%

# Results: Avoidance of Walking Outside Due to Fear of Crime

- Cross-level interactions
  - Gender*levels of violence

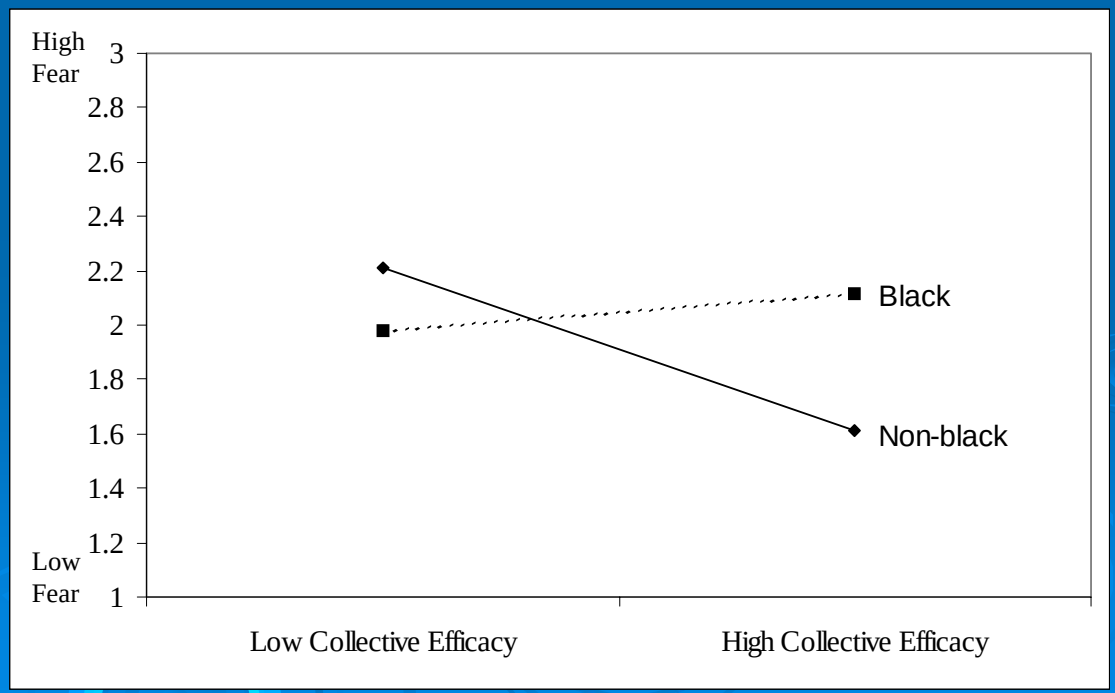
    The effect of levels of violence on fear/avoidance of walking is greater for males than females



# Results: Avoidance of Walking Outside Due to Fear of Crime

- Cross-level interactions
  - Race*neighborhood collective efficacy

    Collective efficacy mediates the relationship between residents' fear and levels of violence, but not for Blacks



# Limitations

- Cross sectional study
- Generalizability
- New dependent variable
- High correlation between gangs and disadvantage

# Summary

- Theoretical and empirical progress: Avoidance of walking in neighborhood is maladaptive response to fear
- Women are fearful, regardless of levels of violence—high levels of violence are associated with avoidance of walking–for males.
- Collective efficacy can reduce maladaptive response, but effect varies by race

# Summary

- Additional research to dissect components of collective efficacy and how/why it interacts with race
- Violence should be treated as public health issue
- Strategizing about active living should include consideration of ways to reduce violence
- Go beyond Crime Prevention through Environmental Design (CPTED).

# Next Steps: Close the Gap

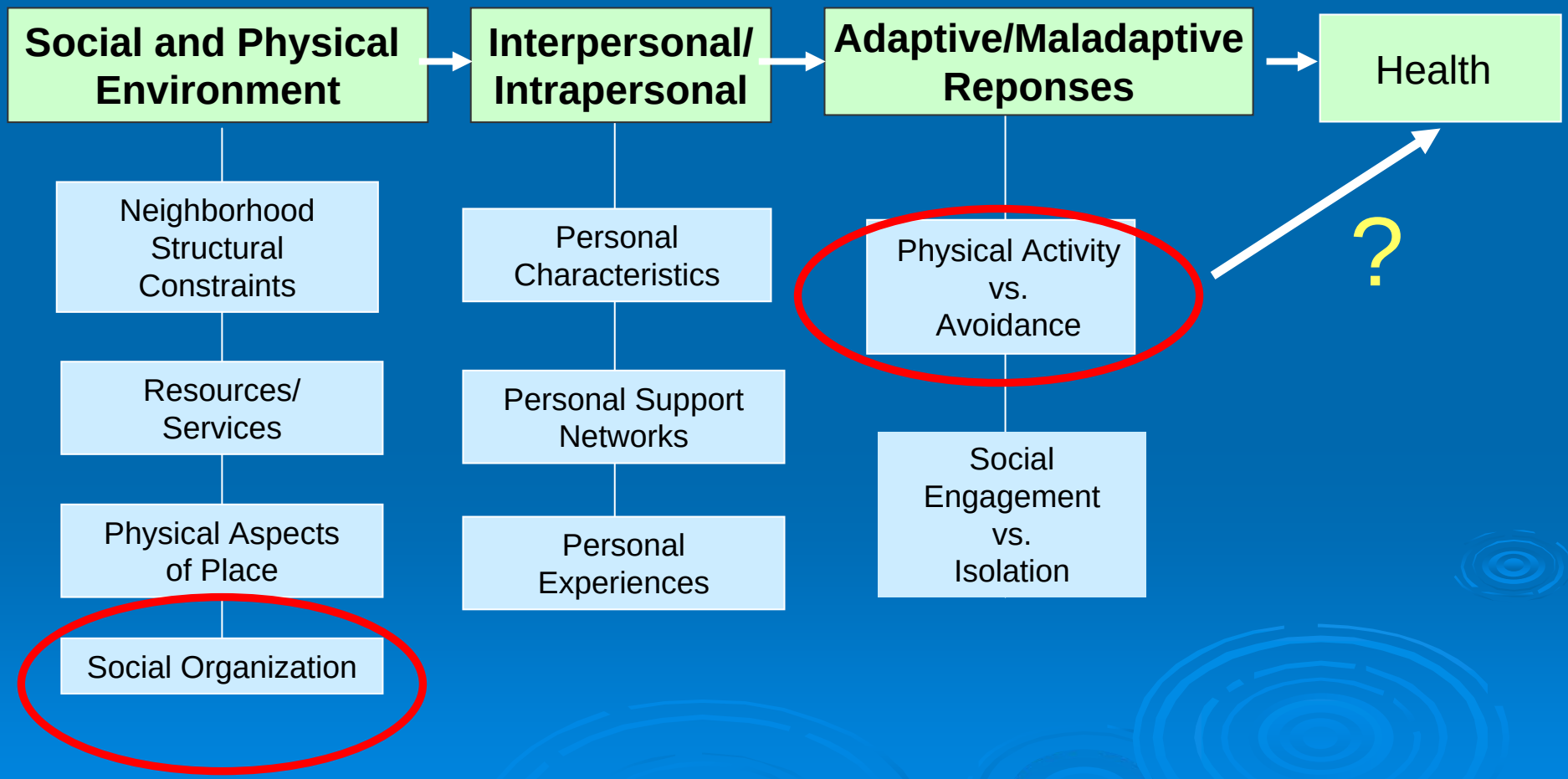



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**Table 1. Odds Ratios from Hierarchical Ordinal Logistic Regression Models**

| | Without Collective Efficacy | With Collective Efficacy |
|---|---|---|
| ***Individual-Level Variables*** | | |
| Age | 1.018*** | 1.018*** |
| Female | 1.512** | 1.512** |
| Missing Gender | 1.612** | 1.614** |
| Black | 1.186 | 1.177[a] |
| Proportion of Life in Neighbrhd | 0.532* | 0.534* |
| Kinship/Friendship Ties | 0.890[a] | 0.890 |
| ***Crime Variables*** | | |
| Gang Count | 1.068 | 1.075 |
| Violent Crime | 1.011[a] | 1.011[a] |
| ***Physical Environment*** | | |
| % Green | 0.969[a] | 0.970[a] |
| % Vacant | 0.998 | 0.998 |
| ***Neighborhood Structural Constraints*** | | |
| Concentrated Disadvantage | 1.442** | 1.382* |
| Residential Stability | 1.008 | 1.009 |
| Racial Heterogeneity | 0.927 | 0.919 |
| **Collective Efficacy** | --- | 0.953 |
| Intercept Variance Component | 0.108 | 0.109 |

a < 0.15; *p < .10; **p<.05; ***p < 01 (two-tailed tests).

Table 2. Odds Ratios for Hierarchical Ordinal Logistic Regression Models of Self-Reported Avoidance of Walking Due to Fear by Individual Background and Neighborhood Characteristics

| | Interaction 1 | Interaction 2 | Full Model |
|---|---|---|---|
| ***Individual-Level Variables*** | | | |
| Age | 1.019*** | 1.020*** | 1.020*** |
| Female | 1.520** | 2.509*** | 2.056*** |
| Missing Gender | 1.626** | 1.787** | 1.748** |
| Black | 1.139 | 1.185 | 1.146 |
| Proportion of Life in Neighbrhd | 0.539[a] | 0.511* | 0.516* |
| Kinship/Friendship Ties | 0.890[a] | 0.886[a] | 0.887[a] |
| ***Crime Variables*** | | | |
| Gang Count | 1.080 | 1.074 | 1.078 |
| Violent Crime | 1.009 | 1.023*** | 1.021** |
| *Physical Environment* | | | |
| % Green | 0.973 | 0.969[a] | 0.973 |
| % Vacant | 1.000 | 0.997 | 0.998 |
| ***Neighborhood Structural Constraints*** | | | |
| Concentrated Disadvantage | 1.330[a] | 1.390* | 1.340[a] |
| Residential Stability | 0.961 | 1.008 | 0.961 |
| Racial Heterogeneity | 0.886 | 0.930 | 0.897 |
| **Collective Efficacy** | 0.747[a] | 0.944 | 0.743[a] |
| ***Interaction Terms*** | | | |
| Black * Collective Efficacy | 1.451** | --- | 1.441* |
| Female * Violent Crime | --- | 0.977*** | 0.978** |
| Intercept Variance Component | 0.092 | 0.109 | 0.092 |

a < 0.15; *p < .10; **p<.05; ***p < 01 (two-tailed tests).