Placed-based social network research: Linking urban adolescents' social lives to their activity spaces

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Adolescent substance use as a socio-spatial practice

- A practice that is constituted within the routine social–environment of adolescents' lives (activity space/routine locations)

- Influencing this practice is the fluid nature of peer contexts, which are continually shaped by adolescents' developmental stages and tasks

How do we represent adolescents in space?

- *Activity space* -All the locations that an individual has direct contact with as a result of his or her daily activities
- An index of an individual's daily or routine spatial movements.
- Representing all the accompanying *psychological, social, and health* related meaning and experiences of these places.

Social network research on adolescents

- Full network studies have greatly contributed to our understanding network structure, positions, ties, and the flow of influence on substance use
- However, this approach is typically aspatial, and decontextualized
- Limits our capability to capture the unique spatial signatures that make up adolescents' socio-spatial lives, their activity space

Placed-Based Social Network Research

- Social networks are not static across peer composition or across locations.
  - Networks have different qualities (levels of risk) based upon the unique composition of alters and the level of risk at a particular location.
  - My network is different at school, the mall, friend's home, etc.
- *Placed-Based Social Network Research*: A contextually specific approach to ground social networks within the social–environment of adolescents' daily lives, their activity space

Grounding Social Networks in Place

- Placed-based approach constitutes an interaction between network composition and place features
- Theorized: Social networks serve as the mechanism through which environmental influences operate on health behaviors

Philadelphia Adolescent Lifestyle Study

Project PALS

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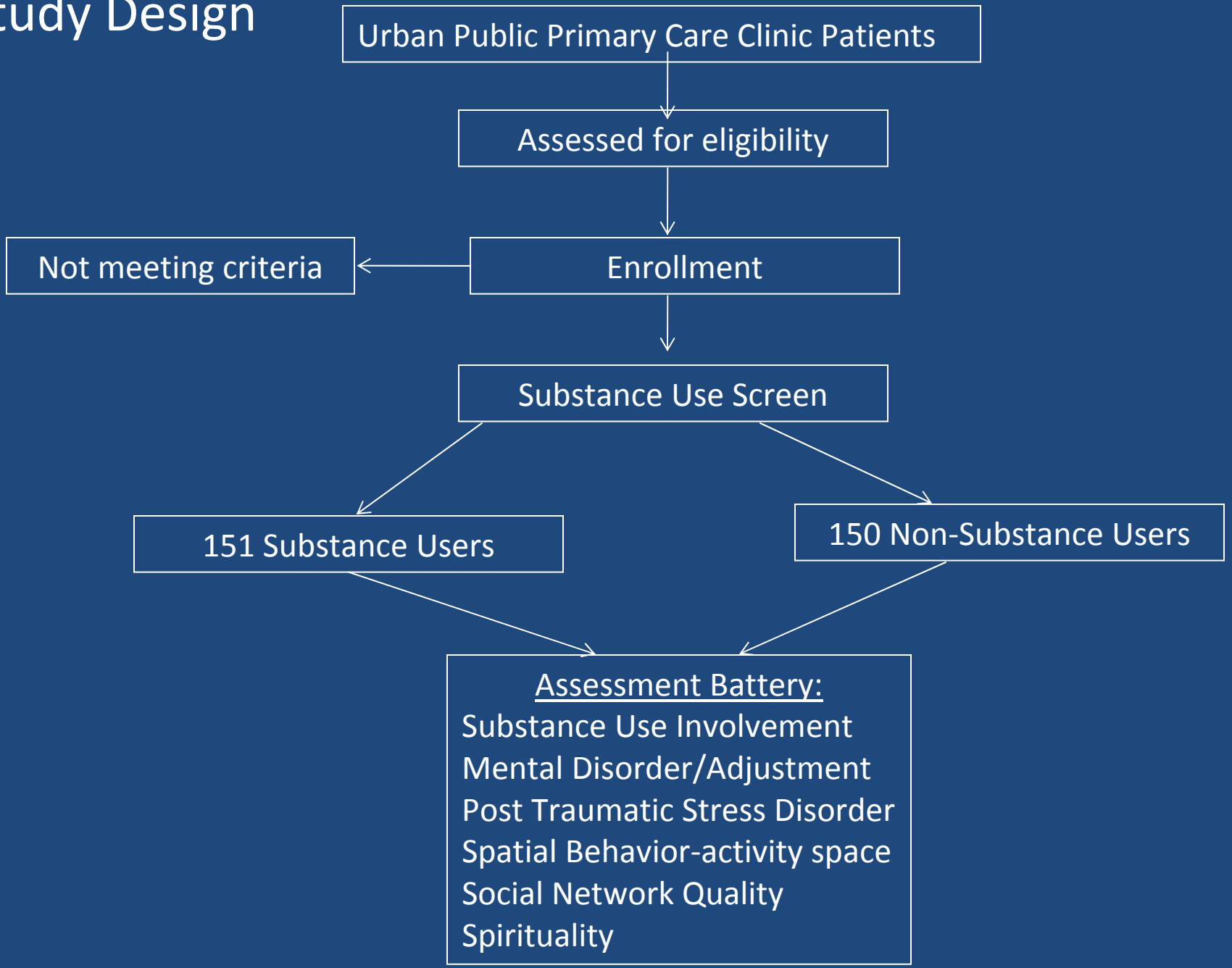
Purpose of this study

- Describe and analyze three domains of urban adolescents:
  - (1) ***Individual*** (mental health)
  - (2) ***Social networks*** (ego-centric)
  - (3) ***Geographic*** (objective environmental community level data & activity spaces)
- Focusing on two groups of urban adolescents:
  - (a) Non-substance using
  - (b) Substance using
- Seeking to answer: What variables are most predictive for group membership?

Study Design



Adolescent Social Network Assessment

(Mason, Cheung, Walker, 2004)

- Characterizes ego-centric social network data on multiple dimensions on multiple alters
- Subjects name the people with whom they have contact at *least once per month* and with whom they have a "meaningful relationship," their close ties.
- ASNA is used with the *Ecological Interview* (Mason et al., 2004) to capture activity space, thereby linking spatial and social dimensions

Adolescent Social Network Assessment

Alters (1-5)	Substance Use	Daily User	Risky activities	Influence: To use/Not use	Network Quality Scores
1	Yes (-1)	Yes (-3)	Yes (-4)	Yes/No (-6)	-14
2	Yes (-1)	No	No (4)	No/Yes (6)	9
Weighted Scores	-2	-3	0	0	-5

- Risk values — Protective values
  - Substance user = -1 — Non-user = 4
  - Daily user = -3 — No risk activities = 4
  - Risky activities = -4 — Influence not to use = 6
  - Influence to use = -6

Total place-based network scores can range from -70 to 70 (5x-14-5x14)

Ecological Interview

- **Listing , Specific Geographic Data & Description**
  - Free listing of places frequented on a typical week
  - Addresses, cross streets, landmarks to geo-code data
  - Which is most ***Safe, Risky, Favorite***

- **Temporal Data**
  - Time of day; Day of the week
  - Duration of stay; Transportation

- **Self-Regulation Data** (favorite place only)
  - **What does this place do for you? (**Clearing your mind, relaxing, privacy, sorting out feelings, comforting, forgetting demands & pressures)

- **Geo-Social Network Linked Data**
  - Who in your network goes to your risky, safest, favorite place? (Alters who frequent identified places)

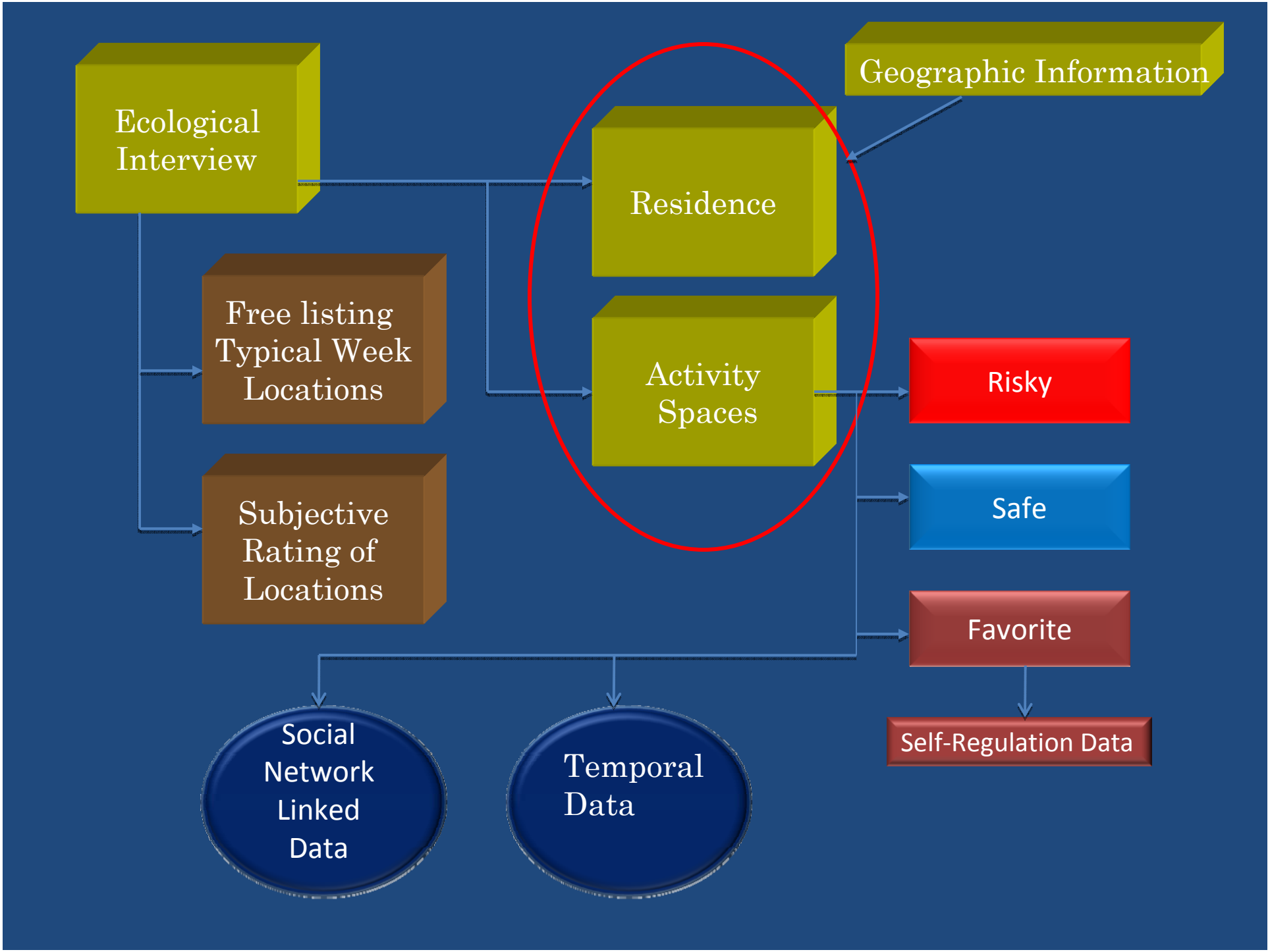
Ecological Interview: Subjective Ratings

- **Which place is the *SAFEST* to you?** (Safe from harm, danger, or the likelihood of engaging in risky, illegal, or dangerous activities) –What makes it safe?

- **Which place is the most *RISKY* to you**? (where you are most likely to engage in risky or dangerous activities, cause trouble, or do illegal activities) –What makes it Risky?

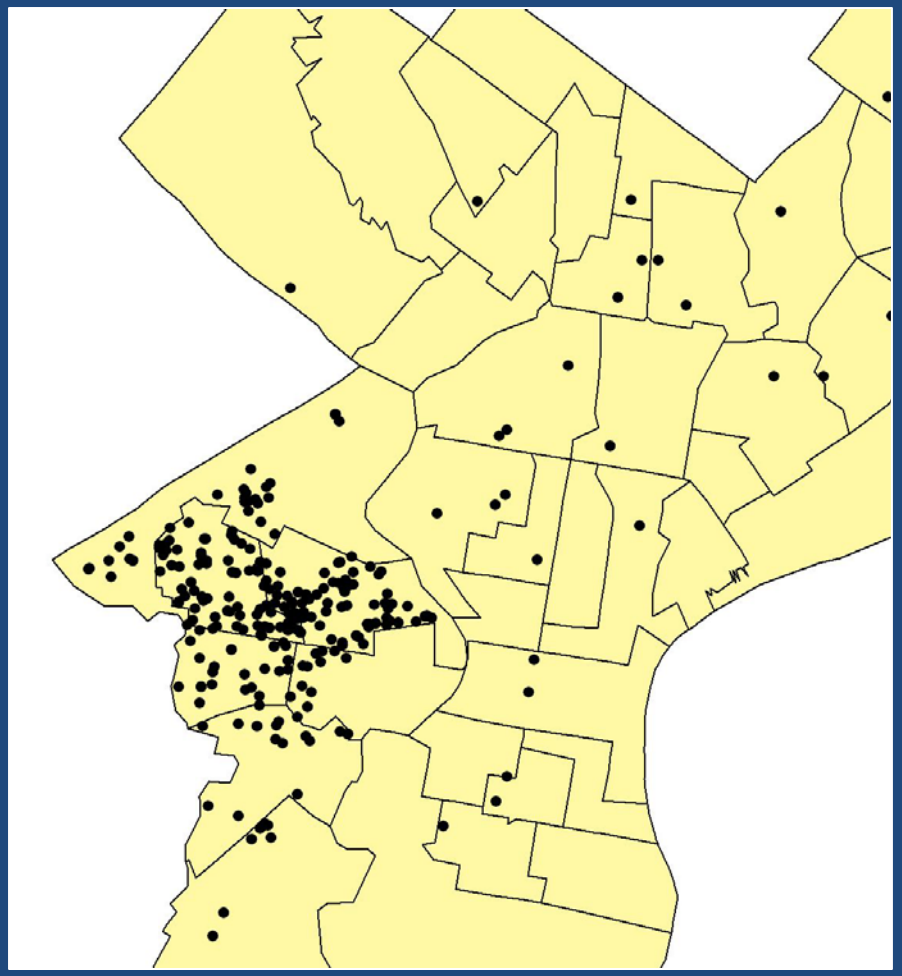
- **Which place is your *FAVORITE?*** –What makes it important? ; What does this place do for your ?(self-regulation items)

Mason, Cheung, Walker, 2004

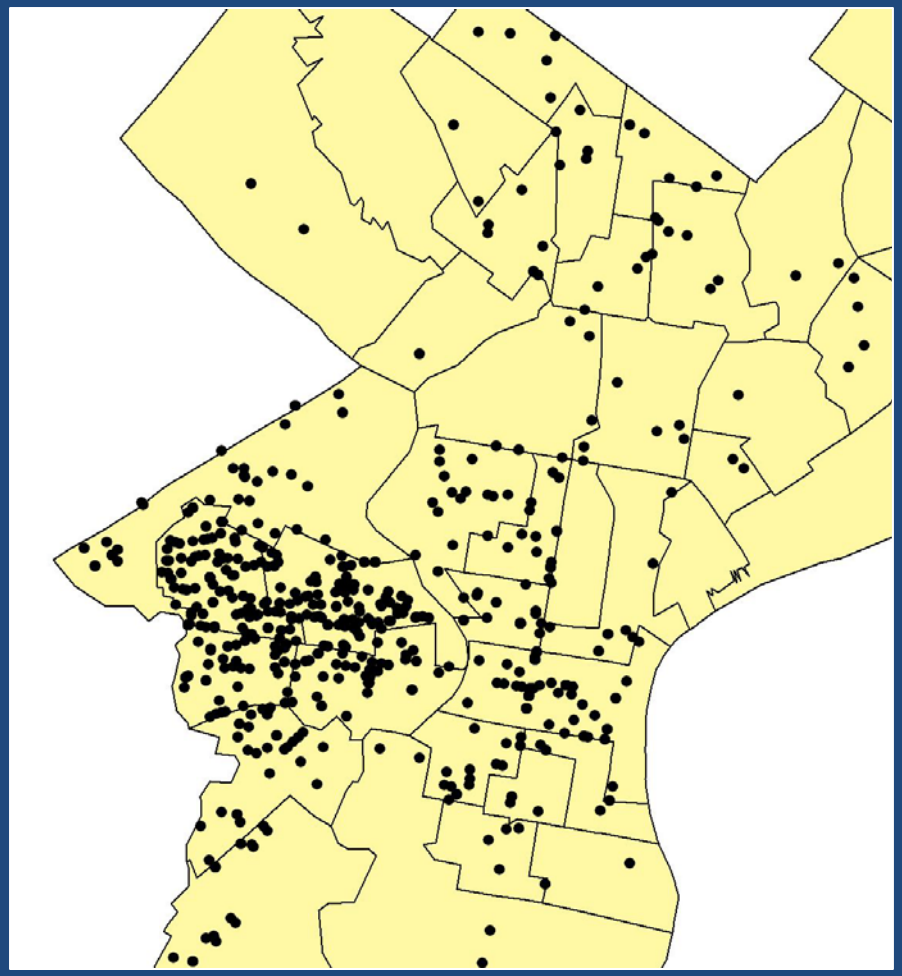

Ecological Interview
Geographic Information
Residence
Activity Spaces
Free listing Typical Week Locations
Subjective Rating of Locations
Risky
Safe
Favorite
Social Network Linked Data
Temporal Data
Self-Regulation Data

Philadelphia Adolescents (n=301)

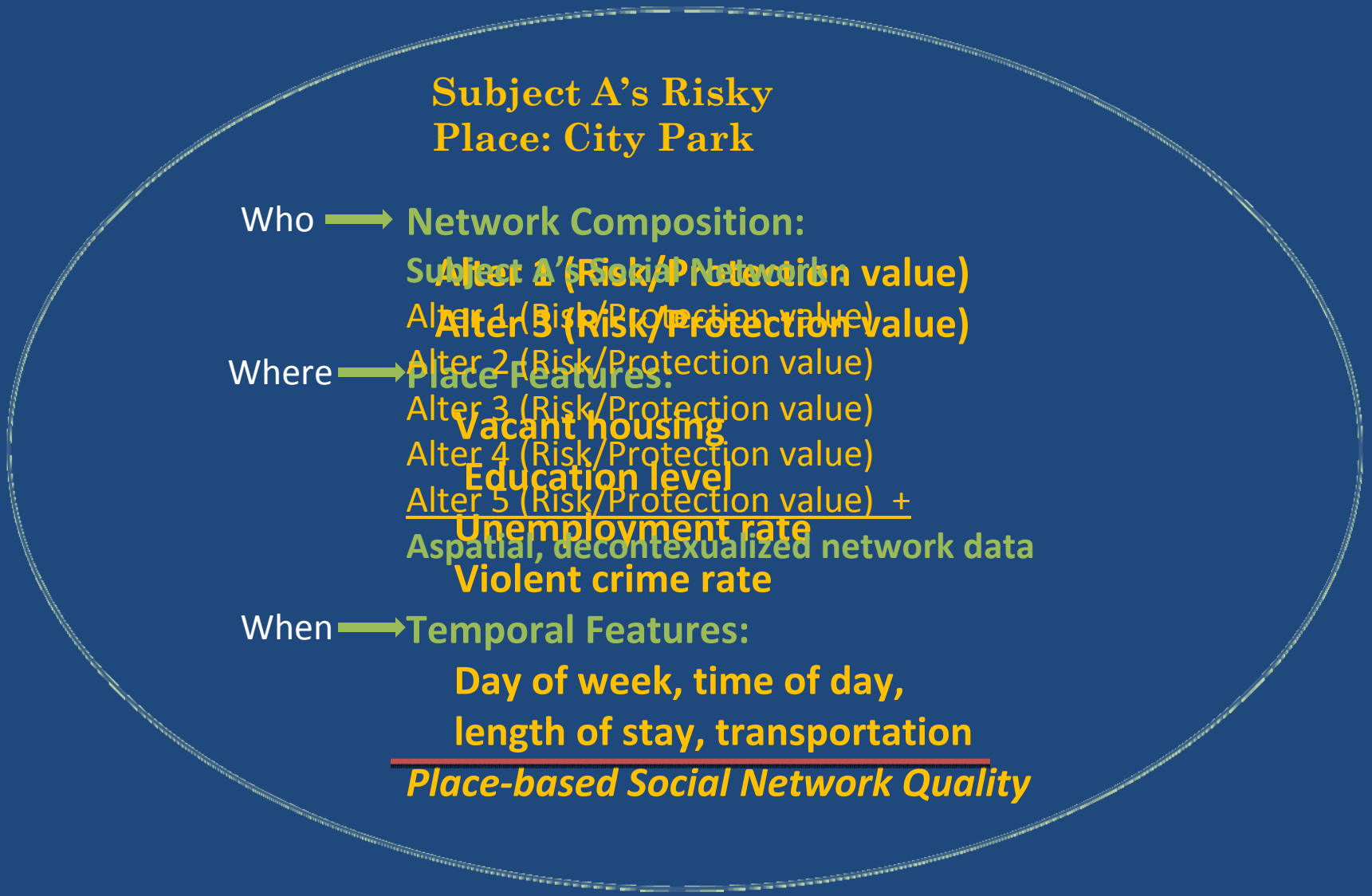
301 Home Locations



835 Routine Locations



Place-based Social Network Quality



Spatial Findings

- Non-substance users had *significant geographic differences* between their safe and non-safe locations (greater risk sensitivity?)
  - Further from crime spots, bars, closer to churches
- For users there was *no difference* between their safe and non-safe places

- Users and non-users often nominate similar types of risky locations (parks, mall), yet:
  - non-users are spending *less time* in these settings
  - limit their time to *weekdays* instead of weekends
  - spend *less than 2 hours*
  - Walk/ride bike vs drive or public transportation

Restorative Qualities of Favorite Places

- Adolescents use favorite places to self-regulate internal lives by interacting with their environments

- Teens with more substance use, school & mental health problems were more likely to have self-regulatory experiences at their favorite place
  - Privacy; Sorting out feelings; Comforting; Clearing mind; Relaxing; Forgetting demands and pressures

- Just as peers represent social strategies of self-regulation, place attachments represent environmental strategies

Place-Based Social Network Results

- Substance use was dependent on place-based social networks and this was moderated by gender and age
- Risky networks at risky locations were related to more substance use
- Protective networks at risky locations were related to less substance use

Mann-Whitney *U* analyses: Mean ranks and *U* values

	Female				Male			
	13-16 (n=78)		17-20 (n=105)		13-16 (n=58)		17-20 (n=60)	
	Non Users (n=57)	Users (n=21)	Non Users (n=44)	Users (n=61)	Non Users (n=38)	Users (n=20)	Non Users (n=12)	Users (n=48)
Home Place	41.9	32.9	57.3	49.8	30.6	27.4	33.3	29.7
	U = 461		U = 1152		U = 338		U = 254	
Important Place	42.8	30.3	60.48	47.6	32.3	24.1	38.4	28.5
	U = 406*		U = 1015*		U = 273		U = 192	
Safe Place	44.0	27.1	59.2	48.5	29.5	29.4	36.9	28.8
	U = 338**		U = 1068		U = 378		U = 210	
Risky Place	44.3	26.2	62.7	46.0	32.9	22.9	45.1	26.8
	U = 320**		U = 915**		U = 249*		U = 112***	
Favorite Place	44.6	25.5	59.2	48.5	32.6	23.5	39.6	28.2
	U = 304***		U = 1068		U = 260*		U = 178*	

*p<.05;**p<.005;***p<.001

Odds Ratios(OR) from Logistic Regression Analysis of Place-Based Network Scores to Substance Use

	Female		Male	
Age Groups:	13-16 (n=78)	17-20 (n=105)	13-16 (n=58)	17-20 (n=60)
Home Place Network	0.94 (0.92-1.04)	1.02 (0.97-1.06)	0.98 (0.935)	1.08 (0.96-1.20)
Important Place Network	0.97 (0.90-1.04)	0.94 (0.89-1.00)	0.96 (0.92-1.01)	0.98 (0.90-1.06)
Safe Place Network	0.99 (0.93-1.04)	1.02 (0.96-1.09)	1.02 (0.92-1.01)	1.02 (0.91-1.14)
Risky Place Network	0.94* (0.89-0.99)	0.96** (0.93-0.99)	0.99 (0.95-1.03)	0.86* (0.74-0.99)
Favorite Place Network	0.94* (0.89-0.99)	1.00 (0.96-1.05)	0.98 (0.94-1.02)	0.95 (0.85-1.07)
*p<0.05	**p<0.005	***p<0.001		

What Makes Places Safe or Risky?

- Perceptions of the characteristics of home neighborhoods have been found to a robust predictor of substance use

- However, little is known about
  - how place is perceived within the context of individuals' activity spaces- not just home locations
  - why particular places are attributed as risky and safe
  - if these place-based attributions are associated with social network quality

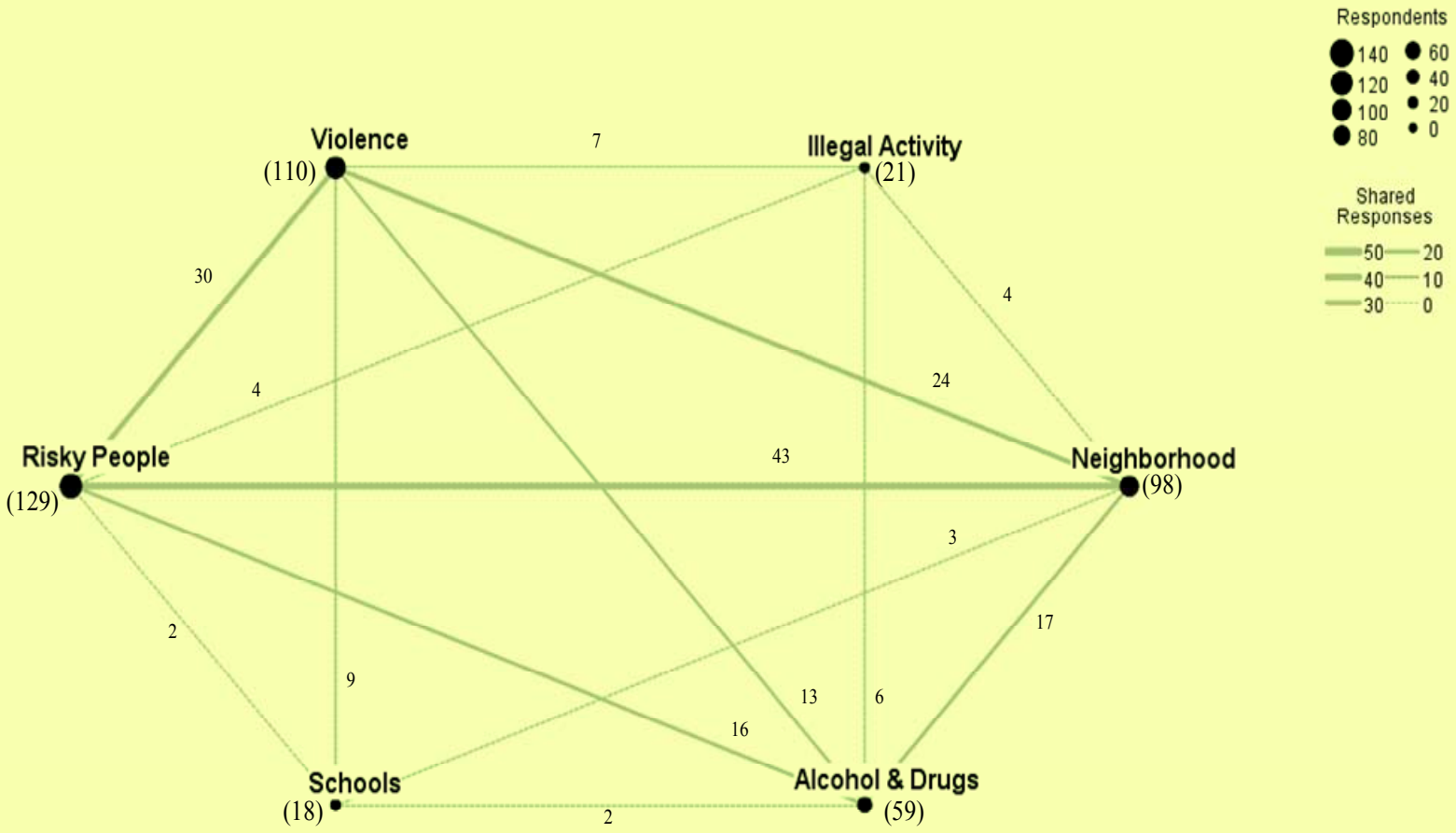
Social Networks Influence Spatial Interpretations

- Linguistic analyses on open-ended survey responses produced categories of reasons for locations being attributed as risky and safe (SPSS Text Analysis)

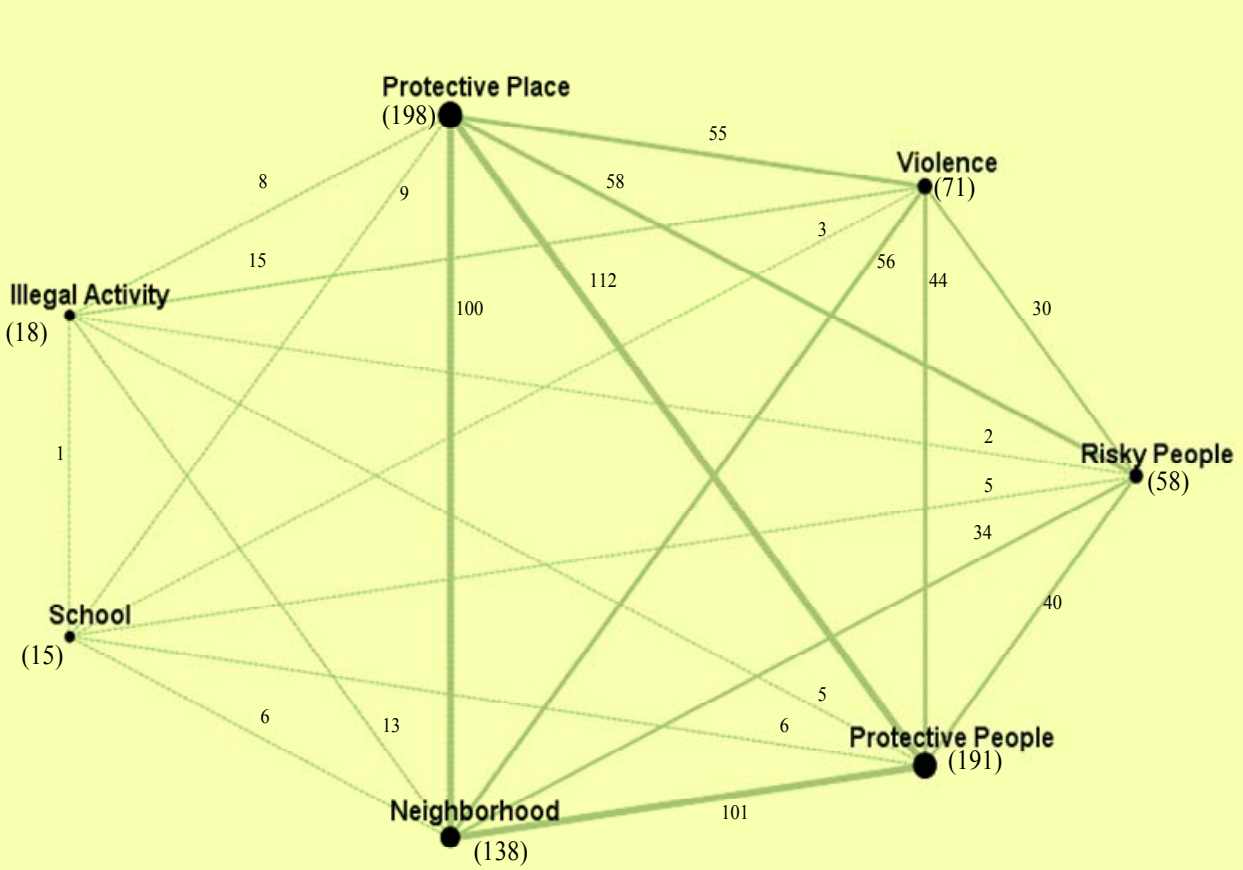
- Categories with closely related concepts, opinions, or attitudes through concept derivation, concept inclusion, semantic networks, and co-occurrence rules

- The resulting categories of risk (n=6) and safety (n=7) were then transformed into dichotomous variables, (yes/no) exported to SPSS to apply quantitative analyses to these data.

Frequency and shared responses of attributions of Risky Activity Spaces (n=301)



Frequency and shared responses of attributions of Safe Activity Spaces (n=301)



Reasons for places attributed as risky by social network quality (n =301)

Reasons Attributed as Risky						
	Risky Social Network		**Protective Social Network**			
Reason	*Yes Frequency*	*Percent*	*Yes Frequency*	*Percent*	X^2 (1)	*Φ*
Risky People	69	22.9	60	19.9	.495	.041
Violence	64	21.3	46	15.3	.394	.036
Neighborhood	49	16.3	49	16.3	1.992	.081
Alcohol & Drugs	**41**	**13.6**	**18**	**06**	**5.567***	**.136***
Illegal Activity	**17**	**5.6**	**4**	**1.3**	**5.785***	**.139***
School	09	03	09	03	.262	.030

*p<.0.05

Reasons for places attributed as safe by social network quality

Reasons Attributed as Safe						
	Risky Social Network		**Protective Social Network**			
Reason	*Yes Frequency*	*Percent*	*Yes Frequency*	*Percent*	X^2 (1)	*Φ*
Protective Place	**123**	**40.9**	**83**	**27.6**	**9.334****	**.176****
Protective People	108	35.9	75	24.9	.113	.019
Neighborhood	**88**	**29.2**	**50**	**16.6**	**6.538***	**.147***
Violence	40	13.3	31	10.3	.010	.006
Risky People	32	10.6	26	8.6	.012	.006
Illegal Activity	09	03	09	03	.262	.030
Schools	05	1.7	10	3.3	3.235	.104

*p<.0.05; **p<.0.005

Conclusions

- Limitations: Exploratory, cross-sectional, smallish sample
- Place-based social networks matter and are related to health outcomes
- Adolescents' social networks have differing levels of risk & protection that are dependent upon composition of the network, which is constituted in their activity spaces.
- Highlight the varying and interactive affects of network quality, place, gender, and age on outcomes
  - The ages from 14-16 appears to be a key transitional period in how social and neighborhood context influences behavior, particularly with females
- Place-based networks are associated with and likely influence teens' interpretations of risky and safe environments
- Underscores that the meaning of place is important and related to social network quality

Opportunities for the Field

- Translate findings from whole network studies into evidence-based prevention and treatment practices in varying settings
- Bring to scale findings from ego-centric studies on population groups
- Integrate approaches, e.g., mixing settings (school/non-school) to test effects over extended periods

Challenges for the field

- Contextualize social network research
- Identify and measure spatial factors' processes and mechanisms of substance use influence
- Develop and test sophisticated theoretical models for socio-spatial linkages and influences on outcomes
- Identify and test the active ingredients' of the unique risk and protective social network qualities through clinical trial research
- Develop new methods and technologies to integrate meaningful spatial data into social network research

The End

Thank You

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