FAMILY PROCESS

Out Drinking the Joneses: Neighborhood Factors Moderating the Effects of Drinking on Relationship Quality over the First Four Years of Marriage

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Neighborhood quality has been cross-sectionally linked to both relationship behaviors and relationship well-being. Consistent with the Vulnerability Stress-Adaptation model of relationship functioning (Karney & Bradbury, 1995), we hypothesized that associations between social behaviors (e.g., drinking) and relationship quality could be moderated by neighborhood factors. Specifically, we characterized neighborhoods along multiple dimensions using multiple methods (self-report, census) to investigate how neighborhood factors might clarify ambiguous effects of alcohol use on marital functioning. A nationally recruited sample of 303 newlywed couples completed a baseline assessment around the time of marriage and was then assessed yearly across the first 4 years of marriage (94% retention). Three level HLM slope-intercept models were used to model changes in relationship satisfaction across the first 4 years of marriage. Results suggested that, for couples living in highly disordered neighborhoods, positive shifts in overall levels of drinking within specific waves of assessment were associated with corresponding negative shifts in satisfaction whereas in neighborhoods without perceived disorder, this effect was reversed. For couples living in neighborhoods with low levels of domestic structures (high census rates of single renters without children), within-couple discrepancies favoring higher rates of husband drinking in specific waves predicted poorer relationship quality for both partners in those same waves whereas those same discrepancies predicted higher satisfaction in high domesticity neighborhoods (high census rates of married homeowners with children). The findings provide insight into the different roles of alcohol use in relationship maintenance and highlight the importance of using external context to understand intradyadic processes.

Keywords: Marriage; Couples; Alcohol; Neighborhood disorder; Neighborhood cohesion; Drinking

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Traditionally in the marital research literature, studies have focused heavily on dyadic processes and individual factors and the impact of these factors on cross-sectional and longitudinal relationship satisfaction. This approach has been a powerful way to identify processes with clear adaptive and maladaptive effects on relationship quality and stability (see Karney & Bradbury, 1995). However, restricting the scope of research to such *intradyadic* factors has been less effective in clarifying the role of socially ambiguous processes demonstrating both adaptive and maladaptive effects on relationships, such as alcohol use (Marshal, 2003). More recently, growing attention has been paid to external factors (e.g., neighborhood quality) and their impact on relationship behaviors and overall relationship well-being (e.g., Cutrona et al., 2003; Hostetler, Desrochers, Kopko, & Moen, 2012; Minnotte, Mannon, Stevens, & Kiger, 2008). While this work is primarily cross-sectional, it promises to produce a nuanced understanding of relationship processes and raise consciousness of how the larger socio-cultural context can alter the course of a marriage (Fincham & Beach, 2010). Such work also supports models such as the enduring vulnerability stress-adaptation model of relationship functioning (VSA; Karney & Bradbury, 1995), which posit that *extradyadic* factors (e.g., neighborhood environment) could influence relationship processes by providing stable sources of stress for couples that activate individual vulnerabilities (Bradbury & Karney, 2004). Researchers from a contextualist perspective (Bronfenbrenner, 1986) would further assert that the same behavior can have different functions in different environments, suggesting that socio-cultural factors might also *moderate* the impact of relationship processes on relationship functioning over time. The current study sought to integrate these frameworks to clarify the often ambiguous links between alcohol use and romantic relationship functioning while also improving on past studies by: (i) taking a multimethod approach to examining neighborhood factors within a sample of newlywed couples, (ii) examining the effects of those neighborhood factors over the first 4 years of marriage (extending a mostly cross-sectional literature), and (iii) illuminating their unique impacts on relationship functioning as *moderators* of the impact of alcohol use, thereby highlighting drinking's role in relationships as a contextually dependent behavior.

The Varying Effects of Alcohol Use on Romantic Relationships

High levels of drinking (i.e., alcohol misuse) have been consistently linked to negative mental health effects such as depressive symptoms (Fergusson, Boden, & Horwood, 2009; Wang & Patten, 2002) and increased anxiety disorders (Kushner, Abrams, & Borchardt, 2000). However, lower and more moderate levels of drinking have failed to demonstrate similarly strong associations, and in many cases, can be linked to a number of positive effects (see Peele & Brodsky, 2000, for review). Similarly, while alcohol use disorders or more extreme levels of at-risk drinking have been linked to Intimate Partner Violence (IPV), those associations are modest in magnitude, suggesting that drinking might be largely unrelated to IPV for many couples (see Klostermann & Fals-Stewart, 2006). Studies that have allowed couples to drink moderate amounts of alcohol before beginning marital interaction tasks have suggested drinking can increase both positive and negative affective expressions and both problem solving attempts and aggressive behaviors (Jacob & Krahn, 1988; Leonard & Roberts, 1998). Consistent with this, alcohol use below clinically problematic levels has been linked to both adaptive and maladaptive effects on relationship functioning (Marshal, 2003). The inconsistent findings in the past literature suggest the presence of underlying moderators that could help clarify the contexts in which couples' drinking might be beneficial or detrimental to romantic relationships.

Modeling alcohol use in romantic relationships is further complicated by the fact that drinking is occurring within a dyadic context. While assortative mating research has

demonstrated that individuals are more likely to form relationships with others with similar levels of drinking (e.g., Agrawal et al., 2006; Grant et al., 2007; Hall, Hesselbrock, & Stabenau, 1983), there still can be couples with sizable differences in drinking frequency and quantity between partners. Longitudinal studies with dyadic data have suggested that such *drinking discrepancies* predicted deterioration in relationship quality while more matched levels of drinking were associated with sustained satisfaction (Birditt, Cranford, Manalel, & Antonucci, 2016; Homish & Leonard, 2007). A more detailed analysis of such "drinking partnerships" in a sample of 647 couples near the start of marriage suggested that couples with either heavy husband drinking or couples where both the husband and wife drank heavily but rarely in each other's presence demonstrated lower concurrent relationship satisfaction compared to couples where both spouses drank frequently and together (Roberts & Leonard, 1998). Taken together, these findings emphasize the importance of understanding alcohol use dyadically as a way of strengthening intimacy or avoiding one another.

Impact of Neighborhood Factors on Romantic Relationships

While examining alcohol use as a dyadic behavior might help to integrate the disparate findings in the previous literature, it should also be noted that the various studies discussed above have been conducted in various social contexts, possibly creating samples with different characteristics depending on the researchers' locations and sampling strategies. This suggests that another way to begin to integrate these disparate findings is to connect them to our existing understanding of neighborhood influence on relationship behaviors.

Conceptualizing neighborhood factors

In the child development literature, the impact of community factors on family processes has been well established, particularly in regards to parenting processes and adolescent outcomes (Leventhal & Brooks-Gunn, 2000; Sampson, Morenoff, & Gannon-Rowley, 2002). This research has identified a diversity of methods to classify neighborhoods through archival data (e.g., census data) and subjective data (perceptions of subjects) and has generally sorted those variables into those representing community resources (e.g., neighborhood economic disadvantage), those describing neighborhood relationships (e.g., neighborhood social cohesion), and others representing social norms and shared activities (e.g., alcohol availability; Leventhal & Brooks-Gunn, 2000; Sampson et al., 2002). In addition to a wealth of research exploring these constructs and indicators separately, there are also a handful of studies exploring these constructs in combination, emphasizing the unique and complementary effects of neighborhood relationships and neighborhood resources (Cutrona, Russell, Hessling, Brown, & Murry, 2000; Ross, Reynolds, & Geis, 2000). However, despite this growing body of work in the family literature, couples researchers have only recently begun to explore the impact of neighborhood context on relationship functioning. As marriages in low-income neighborhoods in the United States are nearly twice as likely to be disrupted as marriages in high income neighborhoods (Bramlett & Mosher, 2002), we would argue that neighborhood factors might play critical roles in models of relationship functioning.

Direct effects of neighborhood resources on relationship functioning

There is a substantial body of research linking the absence of neighborhood resources to relationship functioning and negative relationship processes such as conflict and IPV. Such links have been found consistently using a diverse array of neighborhood measures including those assessing residents' perceptions of neighborhood disorder

(e.g., levels of graffiti, vandalism, noise, crime; Cunradi, 2009; Wickrama, Bryant, & Wickrama, 2010) and those capturing neighborhood disadvantage as captured by archival data (e.g., poverty, unemployment, high school dropout; Benson, Fox, DeMaris, & Van Wyk, 2003; Cutrona et al., 2003; Harris, Hilton, & Rice, 2011; Miles-Doan, 1998). Despite the consistency of findings within this growing body of work, a majority of these studies were cross-sectional, leaving the direction of causality unclear. In addition, many of the studies looking at IPV examined these relationships at the level of neighborhoods rather than at the level of individual couples, thereby limiting their ability to control for factors internal to those relationships (e.g., other relationship processes, a couple's own household income).

Direct effects of social structures in neighborhoods on relationship functioning

In a cross-sectional study examining the role of neighborhood family-friendliness and marital satisfaction in a sample of 96 Mormon families, regression analyses suggested that stronger neighborhood relations and assessments of one's own neighborhood as a good place to live were both associated with higher marital satisfaction (Mannon & Brooks, 2006). These results were obtained even while controlling for a number of demographic variables including those that might lead to selection effects for neighborhood (e.g., household income) or affect an individual's perceptions of the community (e.g., religious involvement, volunteer work; Minnotte et al., 2008). A similar finding emerged in a sample of 260 couples with children, which indicated that neighborhood friends were associated with higher marital satisfaction (Hostetler et al., 2012). While these findings are primarily cross-sectional, the emerging picture suggests that community ties can promote relationship quality.

Neighborhood Factors as Potential Moderators

While the direct effects of neighborhood quality reviewed above already indicate meaningful impacts on relationship quality, a contextualist theoretical perspective (e.g., Bronfenbrenner, 1986) would further suggest that neighborhoods might represent larger social-cultural contexts shaping the impact of relationship behaviors. Thus, not only could neighborhood factors have direct links to relationship quality, but they might provide the most clarity to our models when treated as moderators—thereby recognizing the possibility that behaviors like alcohol use might have very different meanings depending upon the larger neighborhood context.

Moderation by lack of neighborhood resources

Although such a hypothesis has yet to be tested within the published literature, the VSA model of romantic relationship functioning (Karney & Bradbury, 1995) would posit that the stress associated with a lack of community resources would likely contribute to more maladaptive relationship behaviors overall. As moderate levels of drinking reduce inhibitions for both positive and negative behaviors (Jacob & Krahn, 1988; Leonard & Roberts, 1998), any negative effects of drinking could be significantly worsened in low-resource neighborhoods, where couples are living with higher levels of chronic environmental stress.

Moderation by social structure

Neighborhood environments may also shape the social contexts in which drinking occurs. For example, a cross-sectional study of 1,597 couples (McKinney, Caetano, Harris, & Ebama, 2009) demonstrated that alcohol availability (i.e., number of nearby alcohol outlets) moderated links between alcohol-related problems and male-to-female

Intimate Partner Violence (IPV). Specifically, their results suggested that alcohol-related problems were most strongly predictive of IPV for couples living in neighborhoods with high numbers of bars and liquor stores. Given that the past literature on drinking partnerships emphasizes differences between couples drinking together versus apart (Roberts & Leonard, 1998), it would likely be the case that in neighborhoods with higher levels of social structure, even couples with highly discrepant drinking may still find themselves drinking in shared communal contexts. Thus, neighborhood social structure (in this study: higher rates of marriage with children, homeownership, and cohesion with neighbors) could serve to buffer any adverse effects of drinking and/or to augment any positive effects.

The Present Study

Despite these promising findings, only a handful of studies have examined the impact of neighborhood factors on romantic relationships. Although a larger literature has examined how the larger social context of neighborhoods can impact models of family functioning, method reviews from the child development literature (Leventhal & Brooks-Gunn, 2000; Sampson et al., 2002) offer key suggestions for advancing work in this area: (i) clarifying causality by examining neighborhood factors longitudinally, (ii) using multiple methods to assess neighborhood quality to determine the unique contributions of specific factors, (iii) controlling for correlated individual variables like household income, and (iv) avoiding "spatial interdependence," an effect where samples drawn from small geographical areas inflate the associations among neighborhood factors as those neighborhoods likely share more similarities than are being measured. Thus, when extending this work from the family literature to romantic relationships, the current study also (i) employed a prospective longitudinal design, (ii) used multiple methods (census information, couple reports) to describe neighborhood resources and social structure, (iii) controlled for each couple's own household income as a separate variable in all of the analyses, and (iv) recruited a sample at a national level. Specifically, the present study explored a diverse set of neighborhood factors as possible moderators of the impact of alcohol use in a sample of 303 newlywed couples assessed around the time of marriage and then followed yearly over the first 4 years of marriage to test the following hypotheses:

Hypothesis 1a: We hypothesized that lack of neighborhood resources (i.e., higher economic disadvantage and higher perceived disorder) would be associated with lower levels of satisfaction around the time of marriage (i.e., lower baseline satisfaction) and over time (i.e., leading to steeper longitudinal declines in satisfaction), reflecting previous links between neighborhood quality and relationship functioning.

Hypothesis 1b: Based on the previous cross-sectional literature linking social structure to marital satisfaction, we expected that higher neighborhood social structure (i.e., higher rates of marriage with children, homeownership, and cohesion with neighbors) would be associated with higher levels of relationship satisfaction around the time of marriage and over time.

Hypothesis 2a: As a possible clarification of the mixed effects of drinking on relationship quality, we hypothesized that indicators of low-neighborhood resources would moderate the overall impact of drinking, with overall dyadic levels of drinking having the strongest negative associations with relationship quality in the high-stress contexts represented by low-resource neighborhoods.

Hypothesis 2b: In contrast, we expected that neighborhood social structure will moderate the overall impact of drinking, with overall dyadic levels of drinking showing *positive* associations with relationship quality in highly structured neighborhoods.

Hypothesis 3: Our third hypothesis was that discrepant levels of drinking between partners will show negative effects over time, demonstrating the same significant curvilinear effects seen in past literature (e.g., Homish & Leonard, 2007).

Hypothesis 4a: We predicted that indicators of low-neighborhood resources would intensify (moderate) the above discrepancy effect such that in neighborhoods with low resources, drinking discrepancies would be expected to have more pronounced effects.

Hypothesis 4b: We predicted that the effects of neighborhood social structure would buffer (moderate) the impact of alcohol discrepancies on marital satisfaction, such that for couples living in neighborhoods with high structure, even mismatched levels of drinking might still occur in connected social contexts and have no negative impact on satisfaction.

METHODS

Participants

A total of 303 newlywed couples (606 individuals) completed the initial assessment. At the time of the initial assessment, the mean age of the women was 28.2 years (*SD* = 6.2 years), and the mean age of the men was 29.9 years (*SD* = 6.8 years). The majority of participants were Caucasian (89%), with 3.3% African American, 2.6% Latino, 2.5% Asian or Pacific Islander, and 2.6% biracial/other. A majority of the participants attended some college, with men reporting an average of 15.6 years (*SD* = 2.3 years) of education and women reporting an average of 16.0 years (*SD* = 2.1 years). Men reported an average annual income of $37,660 (*SD* = $25,690) and women reported an average income of $26,718 (*SD* = $20,891). During the initial assessment, approximately 31% of the couples were engaged to be married (in an average of 4.4 months, *SD* = 6.5 months), and the remaining 69% were married (for an average of 4.5 months, *SD* = 1.8 months). The couples reported having been together for an average of 3.3 years (*SD* = 1.6 years), 79% had lived together prior to marriage, 93% were currently living together, and 11% had children at the time of marriage. About half (49%) of the sample lived within the region of the study institution in Western New York while the remaining participants lived across the country.

Procedure

All materials and procedures for this study were approved by an IRB. Participants were recruited through bridal shows (32%), national newspaper and television coverage (28%), online advertising (19%), referrals through friends (12%), and community flyers (3%) between the years 2005 and 2007. Interested couples were screened for eligibility via a 30-minute phone call. To be eligible, participants had to be at least 18 years of age and either engaged to be married within the next year, or married for less than 6 months. Interested and eligible couples were then asked to complete a survey packet online or by mail. After the initial assessment, participants were invited by telephone and email to participate in annual assessments for 4 years. A vast majority (94% of the participants, 95% of couples) completed at least one follow-up assessment, with men who followed up on the study completing an average of 3.4 waves of follow-up (out of a possible 4) and women completing *M* = 3.6 waves of follow-up. To promote honest and confidential responding, partners completing the survey online were sent separate emails with unique links for each partner, and partners completing the survey through the mail were provided separate return envelopes. Participants were also discouraged from discussing responses with each other. Couples were paid $50 for the initial assessment and $25 for each follow-up.

Self-Report Measures

Relationship satisfaction

Relationship satisfaction was assessed using the 32-item Couples Satisfaction Index (Funk & Rogge, 2007). The CSI items were globally worded (how satisfied are you with your relationship, how rewarding is your relationship, how much do you feel like part of a team with your partner), were rated on 6 or 7-point scales, were summed so that higher scores indicated higher levels of relationship satisfaction, and demonstrated strong levels of internal consistency in the current sample (α_{men} = .97, α_{women} = .98).

Alcohol use

The three-item Alcohol Use Disorders Identification Test-Consumption Questions is a well-validated screening tool that can be used to identify hazardous levels of drinking (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998). The three items specifically ask how often subjects drink, how many drinks they have on a typical occasion, and how many times they drank 6 or more drinks in the last year. Answers were rated on a 5-point scale, and were summed so higher numbers indicated heavier drinking (α_{men} = .75, α_{women} = .61).

Self-reported neighborhood cohesion and disorder

Respondents completed 19 items assessing self-reported neighborhood quality including: five items from the Social Ties Scale (Cutrona et al., 2000), two items of the Neighborhood Involvement subscale of the Microsystem Scale (Seidman et al., 1995), seven disorder items from Cutrona and colleagues (2000) that asked about possible problems in the neighborhood, along with five items created by the authors asking respondents to rate the degree to which "people do NOT watch out for each other" as well as three additional problems ("crime," "abandoned or run down homes/apartments," and "homelessness"). Separate exploratory factor analyses (EFA, using principle axis factoring with oblimin rotation) of these 19 items in men and women suggested a clear 2 factor solution (supported by the scree plots and accounting for 54–61% of the variance). The first factor included nine items assessing neighborhood cohesion and closeness (e.g., "My relationships with my neighbors mean a lot to me," "How many friends do you have in the neighborhood?"), showing consistent and robust factor loadings across men and women. These cohesion items were rated on 4- and 5-point Likert scales, and were summed so that higher scores reflected higher levels of cohesion (α_{men} = .85; α_{women} = .83). The EFA results further identified another 10-items factor representing neighborhood disorder as the items asked about the severity of neighborhood problems (e.g., "groups of people hanging out and causing trouble," "gang violence," "vacant or deserted buildings"). The disorder items were rated on a 4-point scale (not at all a problem to a serious problem), and were summed so that higher scores indicated higher levels of disorder (α_{men} = .93; α_{women} = .89). Scores on these two scales were averaged within each couple to obtain dyadic assessments of neighborhood cohesion and disorder.

Neighborhood Census Data

We collected data from the 2000 US Census (the closest assessment to the beginning of the study) at the block group level as block groups tend to represent fairly small geographical areas typically conceptualized as neighborhoods. Census data on neighborhoods were available at the census block group level for 92% of the couples in the current sample. To cast a broad conceptual net and potentially expand beyond previous operationalizations, we collected 64 distinct indicators representing the diversity of indicators available from

the Census and subjected them to EFA (using principal axis factoring with oblimin rotation). Those exploratory analyses identified 24 indicators that corresponded to the two broader constructs of lack of neighborhood resources (i.e., neighborhood disadvantage) and neighborhood social structure (i.e., neighborhood domesticity).

Neighborhood disadvantage

The following census variables were used to assess neighborhood economic disadvantage:

percent males/females without high school diplomas, percent of adults on disability, percent living in moderate poverty, percent living in severe poverty, percent of elderly living in poverty, percent with comfortable wealth (reversed), percent of males/females unemployed, percent vacant buildings, percent separated males/females, percent black, and percent nonwhite. Given the widely different ranges and variances of the individual census variables, these variables were standardized, then averaged, so that higher scores reflected higher levels of demographic risk (α = .91).

Neighborhood domesticity

The following census variables were used to assess the degree to which a neighborhood contained traditional family structures:

percent owner occupied housing, average family size, families per household, percent one-person households (reversed), percent families married with kids, percent married adult males/females, percent of single adults males/females (reversed), percent female head of household (reversed). Indicators were standardized, then averaged, so that higher levels indicated more domestic communities (α = .96).

RESULTS

Sample Descriptives

At the beginning of the study (near the start of marriage), the couples were notably happy in their relationships (as is typical of newlywed samples), with average Couples Satisfaction Index (CSI-32; Funk & Rogge, 2007) scores of 136 for husbands and 138 for wives. However, satisfaction also displayed reasonable variance at baseline (SD_{husbands} = 21.3; SD_{wives} = 22.5), with 25 husbands' and 20 wives' baseline CSI-32 scores falling below the established threshold of 104.5 for significant dissatisfaction (see Funk & Rogge, 2007). The couples also reported a range of alcohol use on the items of the AUDIT-C. Specifically, 5.2% reported no drinking whatsoever at baseline, 4.8% reported only wives drinking, 4.1% only husbands, and a majority (85.9%) reported both spouses drinking. Of the spouses reporting drinking at baseline, husbands reported drinking an average of 6.5 times per month (*SD* = 5.6) and consuming 2.9 drinks on a typical drinking day (*SD* = 2.1) whereas wives reported drinking 4.7 times per month (*SD* = 4.8) and consuming an average of 2.3 drinks (*SD* = 1.4). This means that among spouses reporting alcohol use, husbands reported drinking an average of eight more drinks per month than wives. A total of 20% of husbands and 14% of wives scored at or above 5 on the AUDIT-C, suggestive of at-risk drinking in general population samples (Rumpf, Hapke, Meyer, & Ulrich, 2002). As seen in Table 1, the bivariate correlations among the variables were low to modest in magnitude in the initial assessment, supporting their simultaneous use in multivariate models. Table S1 presents the means and standard deviations for relationship satisfaction and self-reported drinking across all waves of assessment, split by gender.

Table 1

Descriptives and Correlations among the Initial Assessments of the Variables Examined

Variable	Range	*M*	*SD*	Correlations among the variables						
				1	2	3	4	5	6	7
1. Relationship satisfaction (CSI-32)	0–161	139.5	22.1	(.68*)	−.14*	−.10	−.13	.10	−.06	−.01
2. Drinking (AUDIT-C)	0–12	3.2	2.23	−.12	(.47*)	.12	.07	.07	.03	.03
3. Dyadic household income ($/year)	0–168,000	55,302	33,600	−.06	.21*	(.24*)				
4. Couple reported neighborhood disorder	0–30	3.3	4.5	−.15*	.08	−.14*	(.61*)			
5. Couple reported neighborhood cohesion	0–30	12.6	6.1	−.05	.02	.11	−.11	(.58*)		
6. Census disadvantage	−1.5 to 4.7	0	1	.08	.02	.05	−.04	.00	—	
7. Census domesticity	−2.8 to 2.0	0	1	−.03	−.06	−.03	−.03	−.03	−.34*	—

Note. Census variables reflect composites of averaged *z*-scores (given the differing variances among their components), and so those variables were converted into *z*-scores prior to analyses. Correlations with individual data from females are presented below the diagonal whereas correlations with individual data from males are presented above the diagonal. Correlations between males and females on individual reports are presented within parentheses on the diagonal.

*$p < .05$.

Analytic Strategy

To test neighborhood factors as moderators of the impact of drinking on changes in relationship satisfaction, we built 3-level, slope-intercept models using HLM (Raudenbush & Bryk, 2002), centering time so that it would equal zero on each couple's wedding date. Changes across time were modeled at Level 1, baseline within-couple differences were modeled at Level 2, and baseline couple-level differences (i.e., differences in neighborhoods and household income) were modeled at Level 3. All the effects in this model are presented together in Table 2.

Level 1: Changes over time

$$\begin{aligned}\text{Relationship satisfaction} = {} & \pi_0 + \pi_1(\text{time in years}) \\ & + \pi_2(\text{couple average drinking at each assessment}) \\ & + \pi_3(\text{H-W, linear drinking discrepancy at each assessment}) \\ & + \pi_4(\text{quadratic drinking discrepancy at each assessment}) \\ & + e\end{aligned}$$

At level 1, we built a slope (π_1), intercept (π_0) model predicting linear change in satisfaction across the study. As drinking behavior was assessed at every wave, we included within-wave assessments of couple average drinking (π_2; averaging H and W AUDIT-C scores) centered within couples across time. We also included within-wave assessments of differences between partner's drinking (π_3, $H_{drinking} - W_{drinking}$; also centered within couples) as well as a quadratic term for that difference (π_4, $(H_{drinking} - W_{drinking})^2$) as Level 1 time-varying covariates. In contrast to the typical actor-partner interdependence modeling approach (APIM; see Kenny & Cook, 1999) that focuses on evaluating the effects of each spouse's behavior as it varies across time, these terms represent that same information with a greater dyadic lens, focusing on the effects of average couple drinking and between-partner discrepancies in drinking as they vary across time. This strategy also allows our analyses to better map onto recent advances in the couples drinking literature (e.g., Homish & Leonard, 2007). Despite this shift in strategy, the dyadic drinking terms are mathematically comparable to the effects in an APIM framework (see Kenny & Cook, 1999). Thus, these terms allowed us to examine how shifts in the ratio of Husband to Wife drinking within specific waves might be associated with corresponding shifts in satisfaction in those same waves. Table 2 is organized by these Level 1 effects (i.e., πs), with all higher level predictors nested in the same set of rows.

Level 2: Within-dyad predictors

$$\begin{aligned}\pi_0 = {} & \beta_{01}(\text{husband}) + \beta_{02}(\text{wife}) + \beta_{03}(\text{husband})(T0\,\text{couple avg drinking}) \\ & + \beta_{04}(\text{wife})(T0\,\text{couple avg drinking}) + \beta_{05}(\text{husband})(T0\,\text{linear drinking discrepancy}) \\ & + \beta_{06}(\text{wife})(T0\,\text{linear drinking discrepancy}) \\ & + \beta_{07}(\text{husband})(T0\,\text{quadratic drinking discrepancy}) \\ & + \beta_{08}(\text{wife})(T0\,\text{quadratic drinking discrepancy}) \\ \pi_1 = {} & \beta_{11}(\text{husband}) + \beta_{12}(\text{wife}) + \beta_{13}(\text{husband})(T0\,\text{couple avg drinking}) \\ & + \beta_{14}(\text{wife})(T0\,\text{couple avg drinking}) + \beta_{15}(\text{husband})(T0\,\text{linear drinking discrepancy}) \\ & + \beta_{16}(\text{wife})(T0\,\text{linear drinking discrepancy}) \\ & + \beta_{17}(\text{husband})(T0\,\text{quadratic drinking discrepancy}) \\ & + \beta_{18}(\text{wife})(T0\,\text{quadratic drinking discrepancy}) + \beta_{19}(\text{husband})(\text{own}\,T0\,\text{satisfaction}) \\ & + \beta_{110}(\text{wife})(\text{own}\,T0\,\text{satisfaction}) + r_1\end{aligned}$$

TABLE 2

HLM Model Predicting Change in Relationship Satisfaction over Time

	Effects in husbands			Effects in wives		
Effects being examined	*B*	*SE*	*p*	*B*	*SE*	*p*
π0: Predicted satisfaction at start of marriage	**0.229**	**0.059**	**<.001**	**0.367**	**0.066**	**<.001**
T0 Couple average drinking	−0.054	0.055	.333	−0.056	0.063	.370
T0 Linear discrepancy	−0.040	0.053	.458	−0.031	0.061	.610
T0 Quadratic discrepancy	0.028	0.035	.429	−0.047	0.037	.211
Dyadic household income	−0.056	0.054	.301	−0.020	0.063	.751
Couple reported neighborhood disorder	**−0.106**	**0.048**	**.029**	**−0.139**	**0.053**	**.009**
Couple reported neighborhood cohesion	**0.107**	**0.048**	**.026**	−0.024	0.050	.631
Census neighborhood disadvantage	−0.064	0.053	.230	0.021	0.053	.695
Census neighborhood domesticity	−0.027	0.051	.596	−0.025	0.057	.663
π1: Linear change in satisfaction across the 4 years of the study	**−0.157**	**0.021**	**<.001**	**−0.170**	**0.022**	**<.001**
T0 satisfaction	−0.006	0.027	.817	−0.015	0.033	.654
T0 couple average drinking	0.025	0.019	.197	0.016	0.020	.441
T0 linear discrepancy	−0.027	0.019	.160	−0.033	0.020	.099
T0 quadratic discrepancy	−0.002	0.013	.901	0.012	0.012	.342
Dyadic household income	0.000	0.017	.989	0.001	0.017	.949
Couple reported neighborhood disorder	0.012	0.018	.494	0.025	0.019	.173
Couple reported neighborhood cohesion	−0.027	0.017	.110	−0.001	0.016	.958
Census neighborhood disadvantage	−0.010	0.017	.575	−0.033	0.018	.063
Census neighborhood domesticity	−0.013	0.019	.514	0.002	0.019	.918
π2: TVC—time-varying shifts in couple average drinking	0.046	0.043	.285	0.014	0.047	.772
Moderated by:						
Dyadic household income	−0.003	0.046	.943	0.060	0.044	.177
Couple reported neighborhood disorder	**−0.077**	**0.040**	**.053**	**−0.089**	**0.041**	**.033**
Couple reported neighborhood cohesion	−0.015	0.039	.696	−0.037	0.041	.365
Census neighborhood disadvantage	−0.045	0.042	.291	0.020	0.042	.631
Census neighborhood domesticity	−0.070	0.045	.119	−0.073	0.045	.102
π3: TVC—time-varying shifts in (husband–wife) drinking discrepancy (linear effects)	−0.001	0.031	.976	0.026	0.031	.413
Moderated by:						
Dyadic household income	0.027	0.042	.519	0.058	0.042	.172
Couple reported neighborhood disorder	−0.027	0.031	.385	−0.034	0.030	.256
Couple reported neighborhood cohesion	−0.006	0.031	.850	−0.058	0.030	.057
Census neighborhood disadvantage	−0.019	0.035	.588	0.029	0.037	.440
Census neighborhood domesticity	0.046	0.036	.208	0.062	0.039	.111
π4: TVC—time-varying shifts in (husband–wife drinking)^2 discrepancy (quadratic effects)	0.007	0.020	.744	−0.014	0.018	.456
Moderated by:						
Dyadic household income	0.006	0.027	.835	0.007	0.024	.766
Couple reported neighborhood disorder	0.014	0.012	.267	0.011	0.011	.355
Couple reported neighborhood cohesion	−0.030	0.023	.202	−0.029	0.023	.202
Census neighborhood disadvantage	0.002	0.018	.920	0.013	0.017	.440
Census neighborhood domesticity	**0.038**	**0.018**	**.042**	**0.034**	**0.017**	**.054**

Note. Time was centered as zero on each couple's wedding date, so the level 1 intercept (π_0) reflects satisfaction at the start of marriage. TVC = Time-Varying Covariates entered centered within individuals at level 1, representing shifts above/below each individual/couple mean at each wave of assessment (predicting corresponding shifts in relationship satisfaction above/below the overall linear trajectory for each partner). Significant effects ($p < .05$) have been bolded for ease of interpretation. Marginally significant effects have been bolded only if they represent a replication of a significant effect in the other spouse.

$$\pi_2 = \beta_{21} * \text{husband} + \beta_{22} * \text{wife}$$

π_3 and π_4 have the same dichotomous predictors as π_2 to model each spouse independently.

At level 2, to account for possible overall differences in trajectories based on alcohol use, we allowed couple drinking variables to predict baseline satisfaction (π_0) and linear change over the course of the study (π_1). We additionally let individuals' baseline reports of relationship satisfaction predict their own linear change in satisfaction. As seen in the equations, in order to model effects in both partners simultaneously, we created level 2 dichotomous variables coding gender and created the necessary between-level (e.g., β_{01}, β_{02}, β_{11}, β_{12}) and within level (i.e., β_{03} thru β_{08} and β_{13} thru β_{110}) gender interaction terms to allow the model to freely vary across husbands and wives. For ease of comparison, the effects modeled for each spouse are presented in parallel in Table 2.

Level 3: Between-couple predictors

$$\beta_{01} = \gamma_{010} + \gamma_{011}(T0\,\text{household income}) + \gamma_{012}(1\text{st neighborhood var}) + \cdots + u_{01}$$

$$\beta_{02} = \gamma_{020} + \gamma_{021}(T0\,\text{household income}) + \gamma_{022}(1\text{st neighborhood var}) + \cdots + u_{02}$$

$$\beta_{03} = \gamma_{030}$$

β_{04} thru β_{08} have no predictors or random effects at level 3 as in β_{03} above.

$$\beta_{11} = \gamma_{110} + \gamma_{111}(T0\,\text{household income}) + \gamma_{112}(1\text{st neighborhood var}) + \cdots$$

$$\beta_{12} = \gamma_{120} + \gamma_{121}(T0\,\text{household income}) + \gamma_{122}(1\text{st neighborhood var}) + \cdots$$

β_{13} thru β_{110} have no predictors or random effects at level 3.

$$\beta_{21} = \gamma_{110} + \gamma_{111}(T0\,\text{household income}) + \gamma_{112}(1\text{st neighborhood var}) + \cdots$$

β_{22} thru β_{42} have equations similar to β_{21} to create remaining cross-level interaction terms.

We allowed the neighborhood variables and household income to directly predict satisfaction at the start of marriage (adding it to the β_{01} and β_{02} equations at level 3 which feed into π_0 in the lower levels of the model) and linear change in satisfaction across the 4 years of the study (adding it to β_{11} and β_{12}, which feed into π_1). By including household income, we ensured that any moderation results found for neighborhood variables could not be better explained by the relative wealth of individual couples. We also added household income and the neighborhood variables to the appropriate level 3 equations that feed into the effects testing the predictive effects of alcohol use modeled at level 1, creating between-level interaction terms testing that moderation (specifically to the equations for β_{21} through β_{42}) corresponding to the π_2, π_3, and π_4 level 1 effects. We modeled husband and wife satisfaction at the start of marriage as random effects at Level 3 to model dependence between husband and wife baseline satisfaction (see Kenny & Kashy, 2011). However, as there are only two level 2-units per couple (individual partners within the dyad) and as male and female slopes tend to be excessively correlated (making it difficult to model them as separate random effects), the same strategy could not be applied to slopes, which were instead treated as a random effect at level 2.

All continuous variables in the model were standardized within their final levels of analysis prior to running the models, creating approximate equivalents of standardized regression coefficients. While HLM is very flexible at handling missing data at the lowest level (representing longitudinal trajectories), cases are removed from the analysis if they are missing any data at higher levels (i.e., levels 2 and 3). To retain the full sample in the analyses, data missing from the initial assessment were imputed with multiple imputation using expectation maximization with bootstrapping using the Amelia II program (Honaker, King, & Blackwell, 2011).

Hypothesis 1: Examining Main Effects of Neighborhood on the Slope-Intercept Trajectory

As seen in the first section of Table 2 (π_0), both husbands ($B = 0.229$, $p < .001$) and wives ($B = 0.367$, $p < .001$) were predicted to have above average relationship satisfaction at the start of marriage. Consistent with hypothesis 1, higher levels of couple reported neighborhood disorder significantly predicted lower satisfaction at the start of marriage for both husbands ($B = -0.106$, $p = .029$) and wives ($B = -0.139$, $p = .009$). These coefficients suggest that couples one standard deviation higher on dyadic perceptions of neighborhood problems (e.g., graffiti, litter, crime) were predicted to have male partners an average of 0.11 standard deviations less happy and female partners an average of 0.14 standard deviations less happy at the start of their marriage. Higher levels of couple reported neighborhood cohesion significantly predicted higher male satisfaction at the start of marriage ($B = 0.107$, $p = .026$), suggesting that husbands of couples who are closer to their neighbors tended to be happier at the start of marriage.

As seen in the second section of Table 2 (π_1), both husbands ($B = -0.157$, $p < .001$) and wives ($B = -0.170$, $p < .001$) were predicted on average to have gradual declines in relationship satisfaction across the first 4 years of marriage, resulting in predicted total drops of roughly 0.63 *SD*s in men and 0.68 *SD*s in women across that period. However, there were no significant predictive links between neighborhood factors and change in satisfaction, suggesting that the impact of neighborhood environment on relationship quality might be constant rather than cumulative.

Hypothesis 2–4: Fluctuations in Alcohol Use and Moderation by Neighborhood Variables

As seen in the π_2, π_3, and π_4 sections of Table 2, the effects of alcohol use on male and female relationship satisfaction across time are revealed through a number of significant interactions with neighborhood factors—even after controlling for moderation by household income. As the main effects of alcohol use did not emerge as significant predictors (focusing on the effects presented in the π_2, π_3, and π_4 rows), these results suggest that the impact of male or female drinking on a relationship would seem to be highly dependent upon the larger context.

Couple reported neighborhood disorder

As seen in Table 2-π_2, couple perceptions of neighborhood disorder moderated the associations between fluctuations in dyadic drinking and satisfaction level significantly in wives ($B = -0.089$; $p = .033$; Table 2-π_2) and marginally in husbands ($B = -0.077$; $p = .053$; Table 2-π_2). Examining these interactions revealed that overall levels of drinking were more problematic for couples who experience their neighborhoods as dilapidated and dangerous (1.5 *SD*s above the mean; Figure 1a and 1b). Specifically, higher than average dyadic drinking within a specific wave was marginally associated with lower female

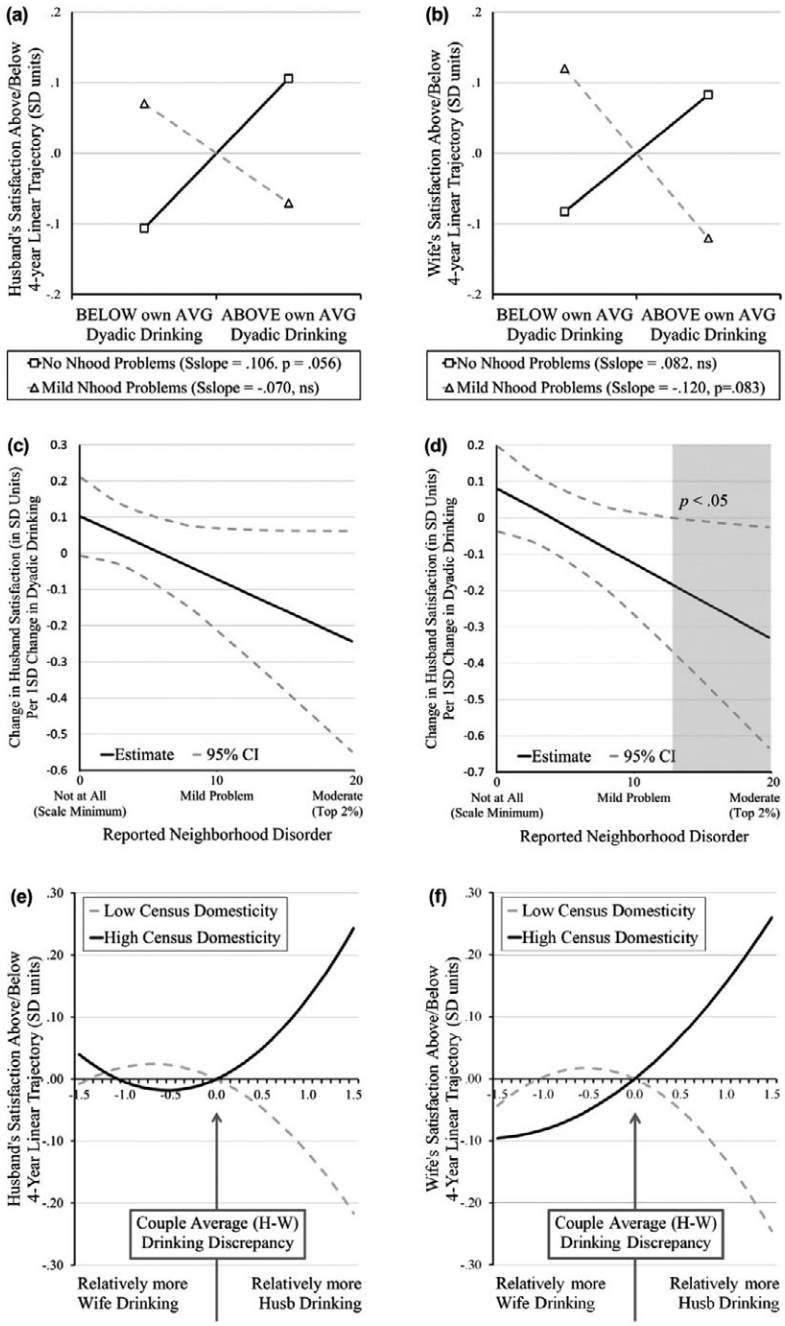

FIGURE 1. Associations between Drinking Levels and Change in Satisfaction Moderated by Neighborhood Variables.

NOTE: Panels (a) and (b) plot couple-reported neighborhood disorder moderating the negative association between fluctuations in dyadic drinking in each wave and corresponding fluctuations in relationship satisfaction. Panels (c) and (d) present regions of significance for that cross-level moderation. Panels (e) and (f) plot census neighborhood domesticity moderating the associations between fluctuations in drinking discrepancies (husband drinking minus wife drinking or H-W) in each wave and corresponding fluctuations in relationship satisfaction. SD = Standard Deviation; AVG = average; Nhood = Neighborhood; Husb = Husband.

(Simple Slope = −0.120; p = .083) relationship satisfaction in that same wave. Although the simple slope was in a similar direction for male satisfaction in that same wave, the effect failed to reach significance (Simple Slope = −0.070; p = .318). As shown in Figure 1c and 1d, regions of significance analyses suggested that alcohol use showed significant negative associations for wife satisfaction as neighborhood disorder scores crossed approximately 12.78 points (Simple Slope = −0.182; p = .050). In contrast, for couples living in neighborhoods with no perceived disorder, higher than average levels of drinking at a given wave marginally predicted marginally higher levels of husband's satisfaction (Simple Slope = 0.106; p = .056) in that wave, and showed a similar, nonsignificant trend toward predicting higher wives' satisfaction (Simple Slope = 0.082; p = .186) at the same wave. Taken as a set, these results lend support to Hypothesis 2a, suggesting that couple drinking might represent a more constructive behavior in nondisordered neighborhoods but could have more maladaptive impacts on relationships in highly disordered neighborhoods.

Census neighborhood domesticity

As seen in Table 2-π_4, neighborhood domesticity moderated the quadratic effects of drinking discrepancies between husbands and wives. When entered into the model, these time-varying drinking discrepancy terms were centered within couples. Thus, a value of zero on that predictor reflects the average discrepancy between husband drinking and wife drinking (usually favoring slightly higher rates of husband drinking). As seen in the left sides of Figure 1e and 1f, shifts in the discrepancy between husband and wife drinking that favored relatively higher levels of wife drinking than normal had minimal associations with husband (Figure 1e) or wife (Figure 1f) satisfaction in those same waves, regardless of neighborhood domesticity. However, the pattern of results was markedly different in waves where shifts in the husband-wife discrepancy favored higher levels of husband drinking. In highly domestic neighborhoods (i.e., neighborhoods with high proportions of married couples, homeowners, and families with children), shifts toward higher rates of husband drinking in a specific wave predicted higher husband (solid line in Figure 1e) and wife (Figure 1f) satisfaction in that same wave. Thus, if in a specific wave, a husband reported drinking far more in relation to his wife (and their typical dyadic drinking patterns) or a wife reported drinking far less, that predicted both spouses being happier in their marriage in that same wave for the couples living in very family-oriented neighborhoods. In contrast, in less domestic neighborhoods (i.e., with more singles, renters, and childless individuals), shifts toward higher rates of husband drinking in a specific wave (in comparison to their wives and their typical dyadic drinking patterns) predicted lower husband (dashed line in Figure 1e) and wife (Figure 1f) satisfaction. These results are consistent with Hypothesis 4b, suggesting that relative increases in the proportion of husband to wife drinking might represent a more constructive behavior in highly domestic neighborhoods but could be more maladaptive in less domestic neighborhoods.

DISCUSSION

This study sought to build on a growing body of work examining how neighborhood factors might impact models of relationship functioning in a national sample of 303 newlywed couples. By integrating a complex model of neighborhoods (i.e., a multimethod approach) with a longitudinal, dyadic model of drinking behavior, these analyses provide insight into the complex impact of alcohol use as a social behavior within a marriage.

Implications

Negative community experiences can exacerbate relationship problems

Consistent with past cross-sectional findings on neighborhood perceptions (Wickrama et al., 2010), we found that couples tended to have lower quality relationships over the first 4 years of marriage in neighborhoods where they observed more problems. Importantly, neighborhood disorder also moderated the effect of fluctuations in alcohol use, where relative increases in couple drinking were associated with marginal improvements in husband satisfaction in low-disorder neighborhoods and marginal drops in satisfaction for wives in high disorder neighborhoods. This small moderation effect helps highlight the fact that if alcohol use has the potential to draw out both positive and negative behaviors and expressions (Jacob & Krahn, 1988; Leonard & Roberts, 1998), it will become more problematic in contexts that elicit more hostility (Wickrama et al., 2010). This pattern of results is consistent with the VSA model (Karney & Bradbury, 1995), as it presents community context as an external stressor eliciting notably different responses.

Community social structure can benefit relationships

In high domesticity neighborhoods, we found a rather different pattern of effects for changes in drinking discrepancy. Namely, our results suggested that in high domesticity neighborhoods, couples will get the strongest benefit to satisfaction in waves where husbands drink more than their wives. Since wives' alcohol use typically declines over the transition into marriage (Leonard & Mudar, 2003), this result could suggest that in neighborhoods with mostly married residents and many opportunities for social contact with those residents, wives who conform to this norm by reducing their alcohol use could expect relative gains in marital satisfaction within our model. This adds an important qualifier to the more generally positive effects of community cohesion: Higher social structure brings greater external supports to relationships, but those benefits might largely go to couples that fit the norms and double standards of the community.

Alcohol use must be understood in all of its contexts

Our results add to a growing body of literature emphasizing that the longitudinal effects of alcohol use can best be understood in a dyadic context by focusing on concordance between partners (Birditt et al., 2016; Homish & Leonard, 2007). However, our findings also suggest another qualification: The role of couple context itself might be shaped by a larger community context. While we were able to replicate the curvilinear pattern found by Homish and Leonard (2007), this pattern only emerged in low-domesticity neighborhoods (i.e., neighborhoods with small family sizes and low rates of homeownership and stability). Closer examination of individual addresses found that low domesticity census block groups were often located in cities (including both low-income and wealthy city neighborhoods). As Homish and Leonard (2007) recruited their sample at a city hall, this means that we were able to replicate this dyadic effect in the portion of our sample most similar to the sample they recruited. The importance of tracking multiple layers of context has already been emphasized in developmental contextualist literature (Bronfenbrenner, 1986), which sees the family as only one level of systemic interaction embedded within larger systems.

Limitations and Future Directions

Despite the methodological advances of the current study and some promising results, the interpretation of those results is constrained by a number of limitations. First, while the national recruitment of the sample ensured a wide variety of

neighborhoods, the sample was still restricted to newlywed couples who were primarily Caucasian and well educated. This might limit the generalizability of the findings and future work should seek samples with greater diversity in both demographics and relationship types. In particular, including more nonheteronormative relationships will help provide further clarity into the role of gender norms in this pattern of moderation. Such efforts will be best supported by similar efforts by the Census Bureau to better capture nonheteronormative relationships at the community level (e.g., proportions of same-sex and 3+ parent families). Second, although annual follow-up assessments are commonly used in newlywed samples, it is likely that drinking behavior could fluctuate and potentially have its strongest effects on a shorter time-frame (i.e., weeks or months). Thus, use of shorter assessment intervals in future studies might yield stronger results and would also allow for time-lagged analyses to test specific directions of causality. In the same vein, the brevity of the 3-item AUDIT-C might have limited variability and precision in assessing alcohol consumption in the current study, and so the use of longer instruments in future studies might yield stronger results. Third, the current study only represents a first step in the process of examining neighborhoods at a multivariate level. Although modeling four different neighborhood factors as simultaneous moderators represents a significant advance over the existing literature, there are additional multivariate techniques that could be used to truly model the dynamic nature of neighborhoods. Future studies should consider augmenting our multivariate approach with techniques like latent profile analysis to help identify the key types of neighborhoods that might most directly impact people's lives. Finally, the model presented represents a "social address" level of analysis (Bronfenbrenner, 1979), as the neighborhood variables offer broad descriptions of the region rather than illuminating the proximal mechanisms by which these effects occur (e.g., assessing specific social norms, stigma, and resources), which can be addressed in future studies.

Despite these limitations, the results presented here offer unique insights into the effects of drinking in early marriage across a range of neighborhoods. The study emphasizes the multifaceted distinctions that can be made between neighborhoods and the multiple cues that face their residents beyond single dimensions of neighborhood quality. These findings additionally contribute to our understanding the differential roles of alcohol in early marriage. By taking the relationship enhancing functions of alcohol use into account, researchers and interventionists alike can begin to understand the factors that maintain or even increase drinking behaviors in some neighborhoods and in some couples.

Most importantly, our findings indicate the importance that should be given neighborhood context by researchers and policy makers alike. As interventions such as relationship education programs can be delivered by local churches without any significant loss in quality (Hawkins, Stanley, Blanchard, & Albright, 2012), it is likely that the most effective way to capitalize on these programs is by continuing disseminating them at the community level. Thus, a more nuanced understanding of how neighborhood context impacts common relationship behaviors will help inform flexible and adaptable delivery of relationship interventions around the differing needs of couples and neighborhoods. At a larger policy level, these results highlight how reductions in dilapidation and disorder can lead to both immediate gains in relationship health across the community as well as protect against other possible negative effects of behaviors such as drinking.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Table S1. Average Levels of Relationship Satisfaction and Self-reported Drinking at each Wave of Assessment, Split by Gender.