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Disorganization Theory, Neighborhood Social Capital, and Ethnic Inequalities in Intimate Partner Violence between Arab and Jewish Women Citizens of Israel

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Abstract We draw on social disorganization (SD) theory and social capital to examine the impact of neighborhood environment on the ethnic gap in intimate partner violence (IPV) between Arab and Jewish women in Israel. We linked census data on neighborhood socioeconomic status (SES) to national data we gathered in 2014–2015 on 1401 women (436 Arab, 965 Jewish) age 16–48. Women were interviewed while visiting 65 maternal and child health clinics throughout Israel. We used General Estimated Equation (GEE) multivariate logistic regression models to adjust for clinic cluster effects and estimated the contribution of neighborhood collective efficacy, problems, relative socioeconomic status (SES), bridging and linking social capital, and social support to explaining ethnic inequalities in IPV, while adjusting for women's socioeconomic and socio-demographic characteristics. We found that any IPV is higher among Arab compared to Jewish women (odds ratio (OR) and 95% confidence intervals (CI) = 4.19 (2.72,6.42)). Collective efficacy and social group membership (bridging social capital) had no effect on the ethnic inequality in any IPV and types of IPV. Women's active participation in social groups (linking social capital), higher social support, and living in neighborhoods with relative SES similar to the ethnic group average) had a protective effect from any IPV and physical IPV. Neighborhood problems were associated with increased any IPV and physical IPV. In the final model, the ethnic gap in IPV was reduced but not eliminated (OR (95%CI) = 3.28 (2.01, 5.35). Collective efficacy did not explain the ethnic gap in IPV, while women's active participation (linking social capital) had a protective effect from IPV. Given the protective nature of women's activism in this population, future research should investigate how this might be incorporated into solutions to IPV. In addition, reducing neighborhood problems, improving neighborhood SES, and increasing social support might help reduce IPV among Arab women, thus decreasing the ethnic gap in IPV.

Keywords Disorganization theory · Collective efficacy · Neighborhoods social capital · Intimate partner violence · Socioeconomic status · Ethnic inequalities · Arab and Jewish women · Israel

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Introduction

Intimate partner violence (IPV), a public health concern on the global scale, is more prevalent among ethnic minority women [1–4]. Compelling evidence suggests that this ethnic gap relates to social and economic neighborhood context [3, 5, 6]. Neighborhood characteristics are fundamental to social disorganization theory (SD) [7], which holds that residents of cohesive communities can better control crime and violence [8], while neighborhood-level poverty, ethnic heterogeneity, and residential instability reduce this control [7]. Social disorganization theory also postulates that moral social orders created by social interactions can determine deviant behaviors and establish the needed bonds to control these behaviors [7, 8]. Conversely, societal transitions, and urbanization processes can disrupt social bonds, weakening social norms and their power to regulate and control deviant behaviors and crime [9]. Collective efficacy, or the level of social cohesion, can maintain the social order and social control, depending on individuals' feelings of belonging and identification with the collective order and norms [10].

While neighborhood studies show that high levels of neighborhood crime and violence have been associated with increased family violence and IPV [11–14], collective efficacy has not always been associated with IPV. Some evidence show collective efficacy reduces the likelihood of IPV (lethal and non-lethal) [15, 16], while other findings indicated that this association is not significant [17]. The association between collective efficacy and IPV has also been found to be inconsistent across ethnic groups, for example between Asian and non-Asian populations [6]. Evidence thus suggests that SD theory works complexly for minority groups, and more research is needed to understand how collective efficacy functions for them [18, 19].

The concept of neighborhood social capital can help us unpack these findings, as it reflects benefits from social ties and interactions in a community. Social capital captures "the glue that holds groups and societies together" [20]. It refers to features of trust, social norms, networks, and reciprocity among community members who share similar backgrounds by coordinating actions that can improve societal social cohesion and collective efficacy [21]. Two forms of neighborhood-level social capital commonly considered in research [21, 22] are neighborhood bridging and linking social capital. These forms of social capital relate to social interactions in and outside the community that also build collective efficacy through coordinated actions with others not necessarily from the community and, by that, increase the social circles and ties. *Bridging* social capital refers to social ties among people of diverse backgrounds, where ties are weaker and are reflected by group membership in organizations. *Linking* social capital involves active relationships and participation with group activities, institutions, or people in authority that can be used to help communities gain leverage and resources [23]. Evidence has shown that social ties and social networks, such as family and friends, are associated with lower exposure to IPV [24, 25]. At the same time, communities that have strong social capital and, as such, strong social cohesion, but where male dominance is not seen as a deviant behavior might have higher IPV against women [6, 24].

To date, however, little research has assessed the impact of neighborhood social capital on IPV among ethnic minorities. We know that the oppositional stance adopted by some native ethnic minority groups toward the mainstream is grounded in historical and ongoing experiences of subordination, for example among African-Americans in the USA [26], Indigenous populations in Canada [25], and via historical apartheid in South Africa [27]. For this reason, the effect of social capital (positive or negative) depends not just on the structure of social ties, group membership, or social participation [28], but also on whether or not these ties lead to benefits [20, 22, 29]. Thus, social capital, usually considered a positive resource promoting well-being, could have detrimental effects on minority communities [30] based on economic disadvantage [31], which might, in turn, impact levels of violence, including IPV [13]. However, the specific links among social capital, minority groups, and IPV, especially outside North America, remain underexplored. In the current study, we combine SD theory (neighborhood collective efficacy) with insights into the lability of social capital to explain the excess of IPV among Arab women in Israel compared to Jewish women.

In Israel, research on the impact of SD theory, social capital, and neighborhood environment on IPV among Arab minority versus Jewish majority groups is sparse. For historical and political reasons, Jewish immigrants who arrived in the early years of the state of Israel established themselves in neighborhoods, towns, and villages separate from Arabs. The Israeli state allocated resources to Jewish immigrants, including land,

housing, employment, and health services, without much attention to the needs of Palestinian-Arabs (here and after Arabs), who became a minority after losing sovereignty over their lands [32, 33]. Arabs were under military administration for about 20 years, which had a strong effect on the social and economic development of their localities and neighborhoods [32]. Today, just 20% of Arabs live in mixed localities (Arab and Jewish). The rest live apart, and Arab neighborhoods have generally lower socioeconomic standing [34]. This history has led to segregation in services and discrimination in allocation of resources resulting in generally fewer opportunities [35, 36], as well as weaker investment in the educational system [37] and health care services for Arabs [38]. Furthermore, the confiscations of many lands by successive governments [39] has changed Arab economic and class structures [40] and encouraged rapid urbanization. We posit that these processes have eroded social cohesion and might have led to higher community and social violence in recent years in the Arab population. Previous studies on social capital in the Arab population have shown lower levels than in the Jewish population [41, 42]. One study that examined individual-level social capital among Arabs and Jews in Israel found that Arabs had lower levels of community trust, perceived helpfulness, trust in local and national authorities, and lower social support [41].

Low social capital could impact community collective efficacy, increase community violence, and eventually IPV among Arabs in Israel, but none of the studies we know of have examined this,; generally, there are few nationwide studies on IPV in Israel. One national survey on domestic violence conducted in 2000 showed that 6% of women reported physical violence, 56% emotional violence in the previous year, with more violence among Arab Muslim women compared to Jewish women [43]. A recent study from 2017 showed that Arab women reported almost twice as high IPV compared to Jewish women (67% compared to 27%, respectively) [44]. Police reports support these findings: Arab women are overrepresented in women's homicide [45].

In this study, we draw on SD theory to determine whether neighborhood collective efficacy (social cohesion and informal social control) can explain the ethnic gap in IPV and different types of IPV between Arab and Jewish women in Israel, and whether social capital (linking, bridging), neighborhood problems, and neighborhood socioeconomic status (SES) alter the effects of collective efficacy, while adjusting for individual-level socio-demographic and socioeconomic factors. We hypothesized that collective efficacy would determine the association between ethnicity and IPV and explain the ethnic gap in IPV in three ways: (1) higher collective efficacy would be protective from IPV and reduce the ethnic gap in IPV, (2) social capital and social support would increase the effect of collective efficacy and reduce the ethnic gap in IPV even more, and (3) greater neighborhood problems and lower neighborhood SES would be associated with higher inequalities in IPV and would weaken the protective effect of collective efficacy.

Methods

Study Population and Sampling

We conducted our nationwide cross-sectional study on Family Relations, Violence and Health between October 2014 and October 2015. We recruited a representative sample of 1401 women of childbearing age (17–49 years old), 436 Arab and 965 Jewish, using a stratified cluster sampling procedure. A detailed description of the study methods can be found elsewhere [44], but briefly, in the five major health districts of Israel (Beer-Sheva, Ashkelon, Center, North, and Haifa), we selected 65 Maternal and Child Health (MCH) clinics of the Ministry of Health, which provide free prenatal and well-baby care. The number of women in each health district was proportional to the distribution of births and ethnic composition (Arabs vs. Jews) in a district. All women visiting the selected MCH clinics either for prenatal care or well-baby follow-up who speak Arabic or Hebrew were eligible. On average, we interviewed 22 women per clinic.

Data Collection

We based our study on guidelines by the World Health Organization for research on domestic violence [46] and received approval by the Research Ethics Review Board, Ben-Gurion University, and the Public Health Division of the Ministry of Health. Trained female interviewers approached women visiting MCH clinics and asked them to participate in a study on "Family relations, violence and health." Those who agreed signed an informed consent form and were interviewed face to

face in Arabic or Hebrew in a private clinic room. Response rate among Jewish women was 73% and among Arab women was 76%. The study team encouraged participants disclosing IPV to talk with the clinic nurse and get professional support. All participants received a brochure with detailed information on support services for IPV, and we encouraged them to use and share this information.

Study Measures

Intimate partner violence (IPV) was assessed using a questionnaire based on a screening tool for intimate partner violence [47]. A similar questionnaire is used in MCH clinics [44]. In the current study, a woman is defined as a victim of IPV if she answered one of the following positively:

1. Are you fearful of drastic changes in your partner's mood?
2. Does your partner blame you or your environment for his problems?
3. Does your partner try to isolate you from your family and friends?
4. Do you need the permission of your partner for all daily expenses?
5. Is your partner jealous in an extreme manner, to the point that he behaves obsessively, for example, he follows you, calls you frequently, needs to know where you are at all times?
6. Your partner has hit you, kicked you, pushed you or thrown things at you?
7. Your partner threatened to intensify the violence against you if you tell anyone?
8. Your partner threatened that he will commit suicide or hurt himself if you leave him?
9. You partner forced you to have sex with him against your will?
10. You live with a constant sense of danger?
11. TYPES OF IPV: were determined based on factor analysis for the above 10 acts and categorized as follows: physical or sexual violence: acts 6, 9, 10; emotional or verbal violence: acts 1, 2, 7, 8; and social or economic violence: acts 3, 4, 5.

ETHNICITY**:** was self-identified: (1) Jewish, (2) Arab.

Neighborhood environment includes social and structural characteristics of the neighborhoods:

a. *Neighborhood-level social characteristics were determined using measures of collective efficacy, social capital, and social support.*

A. Collective efficacy was measured by:

A.1 INFORMAL SOCIAL CONTROL was measured using an adapted version of four statements about the likelihood that a participant's neighbors would intervene in cases of neighborhood violence or problems [10]: "children skipping school and hanging out on a street corner," "a fight breaking out nearby," "children were showing disrespect to an adult," and "problems with the water or electricity in the neighborhood." Four answer categories ranged from "very unlikely" to "very likely." We calculated a sum score, which we dichotomized at the median into: high and low informal social control.

A.2 SOCIAL COHESION was measured by five questions on neighborhood trust, mutual help, and social networks [10]. We asked participants how strongly they agreed with the following statements: "People around here are willing to help their neighbors"; "This is a close-knit neighborhood"; "People in this neighborhood can be trusted"; "People in this neighborhood generally don't get along with each other"; and "People in this neighborhood do not share the same values." Answer categories were: very unlikely, likely, and very likely. We changed the order of categories for the last two questions (low to high) and dichotomized the sum score at the median into high and low social cohesion.

B. Social capital and social support reflect the structure and content of social ties a woman has inside and outside her neighborhood. While these measures were derived from women's answers, they reflect social interactions and engagement at the community level, therefore reflecting community within the neighborhoods [48].

B.1 BRIDGING SOCIAL CAPITAL: Social group membership was measured by eight yes/no questions on membership in community groups or organizations [49, 50]: "In the last 12 months,

have you been an active member of any of the following types of groups?": "Work-related/ trade union," "religious group," "women's group," "sport group," "political organization," "ethnic group organization," and "neighborhood committee." We dichotomized responses into: "membership in at least one group" and "no group membership."

B.2 LINKING SOCIAL CAPITAL was measured by active participation in social or political activities inside or outside a neighborhood and included seven yes/no questions about participation in the last 12 months [51]. For example, "Have you participated in a meeting of a neighborhood committee to discuss problems in your community?" and, "Have you talked with the media (radio or TV or other) about problems in your community?" We dichotomized responses into: participated at least one time, and never participated.

B.3 SOCIAL SUPPORT was measured using a six-item scale evaluating three types of support (material, emotional, informational). Cronbach's alpha for Arab women = 0.87, for Jewish women = 0.86. We dichotomized the sum score of the scale at the median. A score ≤ median was assigned as "low social support," and >median was "high social support."

C. *Neighborhood structural factors included two measures:*

C.1 NEIGHBORHOOD PROBLEMS: were measured using an adapted version of 10-item questionnaire asking about crime, noises, bad smells, vandalism, drug use, police violence, shootings and murder, abandoned empty buildings, neglected sidewalks, and feeling unsafe walking at night [52]. We calculated a sum score of positive answers and dichotomized responses at the median into high and low neighborhood problems.

C.2 NEIGHBORHOOD RELATIVE SES (SOCIOECONOMIC STATUS): We obtained Census data from the Israel Central Bureau of Statistics [34] and linked it to participant's data based on the address they provided at the time of interview. When home address was missing, we used the MCH clinic address as women visit the MCH located in their neighborhoods. Because Arab and Jewish women live in separate localities and neighborhoods, we found a very high correlation between ethnicity and neighborhood SES. Most Arab participants (97.5%) live in low-income neighborhoods, compared to 35% of Jewish participants. To enable assessment of the role of neighborhood SES independently from ethnicity, we created a "neighborhood relative SES" measure by dividing a woman's neighborhood SES by the mean score of her ethnic-group neighborhood SES. We categorized this measure into three groups: lowest quartile, 2nd and 3rd quartiles, and highest quartile; thus, "lower than the ethnic group average," "similar or close to the ethnic group average," and "higher than the ethnic group average."

Socio-demographic and socioeconomic control variables: we determined these based on previous research [43, 53], including:

AGE*:* 16–24, 25–34, and 35–48 years

COUNTY OF BIRTH*:* Israel or other

MARITAL STATUS*:* married and not married (single, divorced, separated, not-cohabitating, or other).

WOMEN'S STATUS DURING THE INTERVIEW*:* Since women visit MCH clinics for prenatal follow up or well-baby care, we used four categories: pregnant with no children, pregnant with children, after birth with 1–2 children, after birth with 3 or more children.

WOMEN'S EDUCATION*:* high school or less, postsecondary education, and university education

HOUSEHOLD SOURCE OF INCOME*:* Work only, social allowances only, other (any combination of work and social benefits, family, or friend support).

RELIGIOSITY*:* self-identified as "religious or very religious," traditional, not religious. For the Jewish Israeli population, these categories often align with a neighborhood's makeup. The question was phrased in a way that can fit the two populations and capture the level of religiosity across religious and cultural groups. This was a self-identified variable, with the following categories: (1) religious or very religious, (2) traditional, (3) not religious.

"Traditional" women in both societies adhere to cultural norms through dress, marriage, custom, and (sometimes) religious belonging, while "religious" or

"very religious" women additionally observe religious commandments and obligations, such as fasting, keeping Shabbat (for Jewish women), and daily prayer (for Arab women) [54, 55].

Data Analysis

We conducted binary general estimating equation (GEE) modeling to adjust for the cluster effect of MCH clinics. To examine the effect of neighborhood social and structural features on the association between ethnicity and IPV, we calculated different GEE models that included the sole and combined effects of SD theory (collective efficacy), neighborhood relative SES, neighborhood problems, social capital (bridging and linking social capital), and social support, while adjusting for women's socio-demographic and socioeconomic characteristics. The first model included the main association between ethnicity and IPV adjusted for socio-demographic and socioeconomic variables (age, status during the interview, education, family income, country of birth, and level of religiosity) that had significant associations with both ethnicity and IPV. Marital status had no association with IPV or types of IPV and was not introduced in the GEE analysis. The association between ethnicity and IPV was adjusted for neighborhood characteristics as follows: neighborhood collective efficacy (Model 2), Model 3 adds neighborhood problems and relative SES, Model 4 adds linking social capital to Model 2, and Model 5 adds social support to Model 4. The final model was fully adjusted for all variables. All models were adjusted for the socio-demographic and socioeconomic variables mentioned in Model 1. The effect of collective efficacy, neighborhood relative SES, neighborhood's problems, neighborhood's social capital, and social support was based on changes (reduction or increase) of the odds ratio of the association between ethnicity and IPV obtained from the first model. This analytic strategy stems from research suggesting that a variable (collective efficacy, neighborhood problems, relative SES, or social capital) that reduces the main association (ethnicity and IPV) when introduced in a multivariate model acts as mediator [56, 57] if it meets two conditions: It is associated with the independent variable (ethnicity), and this independent variable (ethnicity) is associated with the dependent variable (IPV).

Before conducting the GEE, we examined correlations between study variables. All coefficients lower than our threshold of 0.4 were included in the model. We also examined interactions between ethnicity, neighborhood characteristics, and IPV. None of these interactions remained significant in the multivariate GEE models and were not presented in the GEE results.

Results

The characteristics of the study participants are presented in Table 1. The total sample was composed of two thirds of Jewish women and one third of Arab women. Close to 60% were at the age of 25–34. The majority of women was born in Israel and married and was after birth with children during the interviews. About 60% hold postsecondary education or university degree, and the family income of close to 70% of the women was from work. One third of the women stated that they are not religious; one quarter reported a religious or very religious lifestyle while the rest were traditional.

Regarding the neighborhood characteristics, almost two thirds of the total sample reported low informal social control, low social cohesion, no group membership, and low neighborhood problems. Close to half live in a neighborhood that is close to the average SES of their ethnic group. More than half stated that they never participated in a group activity and had higher social support.

Arab women in our study were younger, more likely to be married and pregnant during the interview, more often born in Israel, and had lower SES compared to Jewish participants. Arab women had also lower education, more often reported their main source of income as social allowances, and were more traditional and religious than Jewish counterparts. More Arab women live in neighborhoods with lower collective efficacy (informal social control and social cohesion), that are more economically deprived (low relative SES), with more problems. Arab women also reported significantly lower levels of social capital (bridging and linking) and lower social support (Table 1).

The prevalence of any IPV and of specific types of IPV was significantly higher among Arab compared to Jewish women (Fig. 1), with 68% of Arab women reporting any IPV compared to 28% of Jewish women. For IPV types, Arab compared to Jewish women, respectively, reported 11% and 2% physical IPV, 50% and 19% emotional IPV, and 49% and 16% social IPV.

Most of the univariate associations between socio-economic and socio-demographic variables and any

Table 1 Characteristics of the Arab and Jewish women and their neighborhoods ($N = 1401$)

	Total *N* (%)	Jewish N = 965 (68.9%) *N* (%)	Arab N = 436 (31.1%) *N* (%)	*P*=
Women's characteristics				
Age				<0.001
16–24	247 (17.6)	84 (8.7)	163 (37.5)	
25–34	844 (60.3)	624 (64.7)	220 (50.6)	
35–48	309 (22.1)	257 (26.6)	53 (12.0)	
Country of birth				<0.001
Israel	1133 (81.4)	722 (75.3)	411 (94.9)	
Other	259 (18.6)	237(24.7)	22 (5.1)	
Marital status				<0.001
Married	1329 (95.2)	901 (93.6)	428 (98.8)	
Other	67 (4.8)	62 (6.4)	5 (1.2)	
Women's status during interview				<0.001
Pregnant no children	80 (5.7)	27 (2.8)	53 (12.2)	
Pregnant with children	187 (13.4)	82 (8.5)	105 (24.2)	
After birth with 1–2 children	737 (52.9)	569 (59.2)	168 (38.8)	
After birth with 3 and more children	390 (28.0)	283 (29.4)	107 (24.7)	
Woman's education				<0.001
High school and less	537 (38.3)	259 (26.8)	278 (63.8)	
Postsecondary	251 (17.9)	188 (19.5)	63 (14.4)	
Bachelor degree or more	613 (43.8)	518 (53.7)	95 (21.8)	
Household income source				<0.001
Work	982 (70.1)	642 (66.5)	340 (78.0)	
Social allowances	79 (5.6)	26 (2.7)	53 (12.2)	
Other	340 (24.3)	297 (30.8)	43 (9.9)	
Religiosity				<0.001
Not religious	440 (31.5)	380 (39.5)	60 (13.8)	
Traditional	608 (43.5)	343 (35.6)	265 (60.8)	
Religious or very religious	351 (25.1)	240 (24.9)	111 (25.5)	
Neighborhood's characteristics				
Informal social control				<0.001
Low	866 (62.0)	521 (54.2)	345 (79.6)	
High	530 (38.0)	441 (45.8)	89 (20.5)	
Social cohesion				<0.001
Low	911 (65.5)	594 (62.0)	317 (73.2)	
High	480 (34.5)	364 (38.0)	116 (26.8)	
Neighborhood problems				<0.001
Low	912 (65.2)	687 (71.3)	225 (51.7)	
High	487 (34.8)	277 (28.7)	210 (48.3)	
Neighborhood relative SES				<0.001
Higher than average SES	314 (22.5)	235 (24.5)	79 (18.2)	
Close to the average SES	684 (49.1)	508 (53.0)	176 (40.5)	
Lower than the average SES	396 (28.4)	216 (22.5)	180 (41.4)	
Bridging social capital (Community group membership)				<0.001
No membership at all	915 (65.4)	581 (60.3)	334 (76.8)	

Table 1 (continued)

	Total *N* (%)	Jewish N = 965 (68.9%) *N* (%)	Arab N = 436 (31.1%) *N* (%)	*P*=
Member at one group or more	484 (34.6)	383 (39.7)	101 (23.2)	
Linking social capital (participation in groups activities)				<0.001
Never participated	788 (56.3)	435 (45.1)	353 (81.1)	
Participated at least once	611 (43.7)	529 (54.9)	82 (18.9)	
Social support				<0.001
Low	613 (44.0)	305 (31.8)	308 (71.1)	
High	780 (56.0)	655 (68.2)	125 (28.9)	

IPV, as well IPV types were significant (Table 2). Any IPV and IPV types were higher among younger, pregnant, less educated and lower-income women, and among more religious and traditional women. Country of birth was associated only with any IPV, not IPV types. As most women were married at the time of interview, marital status was not associated with any IPV or IPV types.

Regarding neighborhood characteristics, low informal social control and social cohesion were associated with increased any IPV and IPV types. Higher neighborhood problems and lower neighborhood relative SES were associated with higher prevalence of any IPV and IPV types, except the association between neighborhood relative SES and physical IPV, which was not significant (Table 2). Lower linking social capital (never participated in group activities) and low social support were associated with higher IPV and types of IPV. Only the association between linking social capital and physical IPV was not significant. Bridging social capital (group membership) was not associated with any of the IPV variables.

In the multivariate analysis, we considered variables that were associated with ethnicity and IPV at the level of 5% in the univariate analysis. Results (Table 3) show an odds ratio (OR) of almost four times any IPV among Arab compared to Jewish women (Model 1). The association between ethnicity and any IPV was consistent in most subsequent models. The OR for this association was generally attenuated when different neighborhood characteristics were introduced, but it was still more than three times higher among Arab participants in the fully adjusted model (Model 6). The components of collective efficacy—informal social control and social cohesion—were not associated with IPV, and this was consistent across Models 2 to Model 6. When neighborhood deprivation measures, higher neighborhood problems, and neighborhood relative SES were considered, the ethnic gap in IPV was reduced by 15% (Model 3). In Model 4, when linking social capital was introduced, the ethnic gap in IPV was strengthened compared to the OR in Model 1. Lower linking social capital (never participated in group activities) was associated with higher IPV (Model 4). Lower linking social capital and higher neighborhood problems were risk factors for IPV. However, when social support was introduced, the OR of

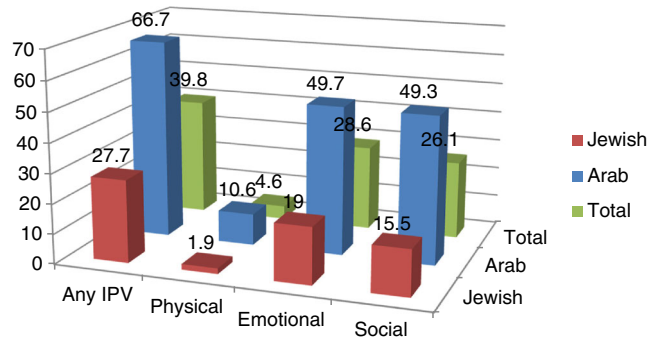

Fig. 1 Prevalence of any IPV and types of IPV (physical, verbal, social) among Arab and Jewish women in Israel (*N* = 1401)

Table 2 Univariate associations between study variables and IPV

	Total	Any IPV		Physical IPV		Emotional IPV		Social IPV	
		N = 557 (39.8%)		N = 64 (4.6%)		N = 399 (28.6%)		N = 364 (26.1%)	
	N	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*
Women's characteristics									
Age			<0.001		0.059		<0.001		<0.001
16–24	247	144 (58.3)		18 (7.3)		103 (41.9)		113 (45.9)	
25–34	844	310 (36.7)		36 (4.3)		216 (25.7)		192 (22.8)	
35–48	309	103 (33.3)		10 (3.2)		79 (25.6)		59 (19.1)	
Country of birth			0.034		0.728		0.051		0.098
Israel	1133	466 (41.1)		51 (4.5)		334 (29.6)		305 (27.0)	
Other	259	88 (34.0)		13 (5.0)		61 (23.6)		57 (22.0)	
Marital status			0.545		0.561		0.149		0.415
Married	1329	526 (39.6)		60 (4.5)		373 (28.2)		342 (25.8)	
Other	67	29 (43.3)		4 (6.1)		24 (36.4)		20 (30.3)	
Women's status at interview			<0.001		0.048		<0.001		<0.001
Pregnant no children	80	46 (57.5)		2 (2.5)		35 (43.8)		37 (46.3)	
Pregnant with children	187	105 (56.1)		14 (7.5)		76 (40.9)		77 (41.4)	
After birth with 1–2 children	737	263 (35.7)		25 (3.4)		185 (25.2)		157 (21.4)	
After birth with 3 or more children	390	140 (35.9)		22 (5.6)		101 (26.0)		90 (23.1)	
Woman's education			<0.001		<0.001		<0.001		<0.001
High school and less	537	268 (49.9)		46 (8.6)		207 (38.7)		196 (36.6)	
Postsecondary	251	104 (41.4)		9 (3.6)		60 (24.0)		79 (31.6)	
Bachelor degree or more	613	186 (30.3)		9 (1.5)		132 (21.6)		89 (14.5)	
Household income source			0 < 0.001		<0.001		<0.001		<0.001
Work	982	377 (38.4)		39 (4.0)		276 (28.1)		242 (24.6)	
Social allowances	78	51 (64.6)		12(15.4)		44 (56.4)		35 (44.9)	
Other	337	130 (38.2)		13 (3.9)		79 (23.4)		87 (25.8)	
Religiosity			<0.001		0.067		<0.001		<0.001
Not religious	440	119 (27.0)		12 (2.7)		94 (21.5)		68 (15.5)	
Traditional	608	285 (46.9)		35 (5.8)		202 (33.2)		192 (31.6)	
Religious	351	154 (43.9)		17 (4.9)		103 (29.6)		104 (29.9)	
Neighborhood's characteristics									
Informal social control			<0.001		0.001		<0.001		<0.001
Low	866	393 (45.4)		52 (6.0)		289 (33.4)		262 (30.3)	
High	530	162 (30.6)		12 (2.3)		108 (20.5)		101 (19.2)	
Social cohesion			0.001		0.036		0.001		0.001
Low	911	393 (43.1)		49 (5.4)		286 (31.5)		262 (28.8)	
High	480	161 (33.5)		14 (2.9)		110 (23.0)		99 (20.7)	
Neighborhood problems			<0.001		<0.001		<0.001		<0.001
Low	912	305 (33.4)		22 (2.4)		216 (23.8)		192 (21.1)	
High	487	253 (52.0)		42 (8.6)		183 (37.7)		172 (35.4)	
Neighborhood relative SES			<0.001		0.081		<0.001		<0.001
Higher than average SES	314	118 (37.6)		13 (4.2)		85 (27.2)		72 (23.0)	
Close to the average SES	684	226 (33.0)		25 (3.7)		153 (22.5)		143 (21.0)	

Table 2 (continued)

	Total	Any IPV		Physical IPV		Emotional IPV		Social IPV	
		N = 557 (39.8%)		N = 64 (4.6%)		N = 399 (28.6%)		N = 364 (26.1%)	
	N	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*	*N* (%)	*P*
Lower than the average SES	396	211 (53.3)		26 (6.6)		159 (40.3)		148 (37.5)	
Bridging social capital (community group membership)	0.442		0.966		0.108		0.391		
No membership at all	915	371 (40.5)		42 (4.6)		273 (30.0)		244 (26.8)	
Member at one or more	484	186 (38.4)		22 (4.6)		125 (25.9)		119 (24.6)	
Linking social capital (participation in groups activities)	0.026		0.072		0.001		0.002		
Never participated	788	334 (42.4)		43 (5.5)		251 (32.0)		230 (29.3)	
Participated at least once	611	223 (36.5)		21 (3.4)		147 (24.1)		133 (21.8)	
Social support			<0.001		<0.001		<0.001		<0.001
Low	613	347 (56.6)		52 (8.5)		267 (43.7)		231 (37.7)	
High	780	208 (26.7)		12 (1.5)		130 (16.7)		132 (17.0)	

the ethnic gap in IPV was reduced by 15% (Model 5). Social support and "close to neighborhood average relative SES" had a protective effect from IPV (Models 3 and 5). The final model attenuated the OR by 31% compared to Model 1.

Looking at ethnic inequalities in different types of IPV (Table 4: 4a, 4b, and 4c), the greatest gap was in physical IPV (compared to emotional or social IPV). Collective efficacy had no significant effect on the ethnic gap in any of the IPV types. The effect of neighborhood characteristics on IPV types was similar to that seen for any IPV. Lower linking social capital, (never participated in group's activities), however, increased the ethnic gap in physical and social IPV (Model 4, Table 4a, c), not for emotional IPV (Model 4, Table 4b). Social support had a protective effect from IPV among Arab women for all IPV types (Model 5, Table 4a, b, and c). Neighborhood problems were a risk factor for all IPV types (Mode 3), but neighborhood relative SES (Model 3) did not play a role in explaining the ethnic gap in types of IPV (Table 4a, b, and c). When we introduced all neighborhood characteristics, the ethnic gap in IPV types was reduced, not eliminated (Model 6 in Table 4a, b, and c).

Finally in Model 6, neighborhood characteristics that were significant for the ethnic gap in physical IPV included neighborhood problems, linking social capital, and social support(Table 4a). For emotional IPV and social, neighborhood problems and social support were significant and had an effect on the ethnic gap in IPV (Model 6, Table 4b and c).

Discussion

Disorganization theory (SD) postulates that neighborhood structural characteristics of low socioeconomic status, residential heterogeneity, and instability are likely to lead to higher crime and community violence via reduced capacity to exert formal and informal social control [7, 8]. In this theory, higher community collective efficacy can have a protective effect, since crime is defined as "deviant behavior" that members with feelings of belonging are reluctant to engage in [10]. Neighborhood studies in criminology applying SD theory to IPV and approaching IPV as "deviant behavior" have yielded inconsistent results [17, 18]. Most have been carried out in the USA, focusing on women's homicide, with many fewer examining non-lethal or specific types of IPV. Our study fills this gap in the literature in several ways. First, it examines associations between collective efficacy and IPV (any IPV) as well as IPV types (physical, emotional, social). Second, it examines whether social capital, neighborhood disadvantage (relative SES and problems), and social support can alter the effects of collective efficacy and thereby contribute to explaining the ethnic gap in IPV and IPV types. Third, for the first time, the

Table 3 Generalized estimating equation (GEE) for *any IPV* and women's ethnicity adjusted for neighborhood characteristics ($N = 1352$)

	Model 1 OR (95%CI)[a]	Model 2 OR (95%CI)	Model 3 OR (95%CI)	Model 4 OR (95%CI)	Model 5 OR (95%CI)	Model 6 OR (95%CI)
Ethnicity						
Arab	4.19 (2.72, 6.42)	3.97 (2.52,6.24)	3.57 (2.22, 5.75)	4.49 (2.80, 7.20)	3.58 (2.20, 5.83)	3.18 (1.92, 5.25)
Jew	1.00	1	1.00	1.00	1.00	1.00
Informal social control						
High		0.84 (0.59,1.20)	0.86 (0.60, 1.23)	0.84 (0.59, 1.20)	0.84 (0.58, 1.21)	0.85 (0.59, 1.23)
Low		1.00	1.00	1.00	1.00	1.00
Social cohesion						
Low		0.78 (0.59,1.03)	0.83 (0.62, 1.10)	0.76 (0.58, 1.01)	0.81 (0.61, 1.09)	0.86 (0.65, 1.15)
High		1.00	1.00	1.00	1.00	1.00
Neighborhood problems						
High			1.69 (1.23, 2.31)			1.58 (1.16, 2.15)
low			1.00			1.00
Neighborhood relative SES						
Higher than average SES			1.11 (0.75, 1.66)			1.04 (0.68, 1.60)
Close to the average SES			0.71 (0.53, 0.95)			0.68 (0.48, 0.94)
Lower than the average SES			1.00			1.00
Linking social capital						
Never participated in groups activities				1.42 (1.14, 1.76)	1.42 (1.15, 1.76)	1.36 (1.09, 1.69)
Participated at least once				1.00	1.00	1.00
Social support						
High					0.44 (0.35, 0.54)	0.44 (0.36, 0.55)
low					1.00	1.00

[a] Odds ratio and 95% confidence intervals

Model 1: Adjusted for age, women's status, education, family income, country of birth, and level of religiosity

Model 2: Adjusted for collective efficacy (informal social control, social cohesion) and socio-demographic variables in Model 1

Model 3: Adjusted for collective efficacy, neighborhood problems, neighborhood relative SES, and socio-demographic variables in Model 1

Model 4: Adjusted for collective efficacy, linking social capital, and socio-demographic variables in Model 1

Model 5: Adjusted for collective efficacy, linking social capital, social support, and socio-demographic variables in Model 1

Model 6: Adjusted for all variables in previous models

study compared IPV between ethnic groups—Arab and Jewish citizens of Israel—in relation to neighborhood characteristics. Fourth, few studies have been conducted on SD theory and IPV outside the North American context.

Our main finding was that collective efficacy (social cohesion and informal social control), a construct of SD theory, was not associated with any IPV or types of IPV. Therefore, collective efficacy did not contribute to explaining the ethnic gap in IPV between Arab and Jewish women. This indicates that "collective efficacy" is not necessarily a protective factor from IPV. This finding is consistent with Frye and Wilt (2001), who also found non-significant associations between collective efficacy and lethal and non-lethal IPV. However, the role of collective efficacy in the excess of lethal violence against Arab women should be examined in future research as incidents of women's homicide are on the increase in the Arab society in Israel [45]. It might be that collective efficacy could explain crimes against women, such as women's homicide, that are not perpetrated by an intimate partner [45]. One study that compared IPV among Asian and non-Asian women suggested that IPV might indicate a backlash: When women's status improves, this provokes more violence against women, as men (not only intimate partners) might feel they are losing control [6].

Our finding that collective efficacy is not associated with different types of IPV supports Frye and Wilt's

Table 4 Generalized estimating equation for *physical, emotional, and social IPV* and women's ethnicity adjusted for neighborhood characteristics

	Model 1 OR (95%CI)[a]	Model 1 OR (95%CI)	Model 3 OR (95%CI)	Model 4 OR (95%CI)	Model 5 OR (95%CI)	Model 6 OR (95%CI)
			4a: Physical IPV (N = 1349)			
Ethnicity						
Arab	5.57 (2.58, 12.01)	4.92 (2.25,10.79)	4.30 (1.81,10.24)	6.40 (2.65,15.48)	4.92 (1.90,12.75)	4.34(1.61,11.68)
Jew	1.00	1.00	1.00	1.00	1.00	1.00
Informal social control						
High		0.54 (0.25, 1.17)	0.56 (0.25, 1.25)	0.55 (0.26, 1.20)	0.59 (0.27,1.29)	0.61 (0.27, 1.36)
Low	1.00	1.00	1.00	1.00	1.00	1.00
Social cohesion						
Low		0.75 (0.39, 1.44)	0.84 (0.42,1.69)	0.73 (0.38,1.39)	0.79 (0.43,1.47)	0.90 (0.46,1.77)
High		1.00	1.00	1.00	1.00	1.00
Neighborhood problems						
High			2.57 (1.51,4.37)			2.47 (1.44,4.25)
low			1.00			1.00
Neighborhood relative SES						
Higher than average SES			1.04 (0.46,2.33)			0.99 (0.43,2.27)
Close to the average SES			0.84 (0.40,1.80)			0.84 (0.37,1.91)
Lower than the average SES			1.00			1.00
Linking social capital						
Never participated in groups activities				1.96 (1.09,3.52)	2.07 (1.17, 3.67)	1.94 (1.10,3.43)
Participated at least once				1.00	1.00	1.00
Social support						
High					0.34 (0.15,0.79)	0.35 (0.16,0.79)
low					1.00	1.00
			4b: Emotional IPV (N = 1348)			
Ethnicity						
Arab	3.17 (2.06,4.87)	2.93 (1.88,4.59)	2.69 (1.69,4.29)	3.08 (1.95,4.88)	2.35 (1.49,3.71)	2.15 (1.34,3.44)
Jew	1.00	1.00	1.00	1.00	1.00	1.00
Informal social control						
High		0.73 (0.52, 1.04)	0.74 (0.52,1.05)	0.73 (0.52,1.04)	0.74 (0.52,1.06)	0.74 (0.52,1.06)
Low		1.00	1.00	1.00	1.00	1.00
Social cohesion						
Low		0.83 (0.62, 1.09)	0.86 (0.65,1.15)	0.82 (0.62,1.08)	0.88 (0.65,1.18)	0.92 (0.68,1.23)
High		1.00	1.00	1.00	1.00	1.00
Neighborhood problems						
High			1.45 (1.07,1.96)			1.39 (1.03,1.87)
low			1.00			1.00
Neighborhood relative SES						
Higher than average SES			1.25 (0.82,1.92)			1.20 (0.76,1.89)
Close to the average SES			0.71 (0.49,1.04)			0.68 (0.45,1.04)
Lower than the average SES			1.00			1.00
Linking social capital						
Never participated in groups activities				1.17 (0.93,1.46)	1.16 (0.93,1.45)	1.11 (0.89,1.39)
Participated at least once				1.00	1.00	1.00
Social support						
High					0.41 (0.32,0.53)	0.42 (0.32,0.54)
Low					1.00	1.00

Table 4 (continued)

	Model 1 OR (95%CI)[a]	Model 1 OR (95%CI)	Model 3 OR (95%CI)	Model 4 OR (95%CI)	Model 5 OR (95%CI)	Model 6 OR (95%CI)
			4c: Social IPV (N = 1349)			
Ethnicity						
Arab	4.27 (2.76,6.60)	4.07 (2.57,6.45)	3.73 (2.29,6.07)	4.52 (2.83,7.22)	3.81 (2.37,6.14)	3.47 (2.12,5.69)
Jew	1.00	1.00	1.00	1.00	1.00	1.00
Informal social control						
High		0.88 (0.62,1.24)	0.90 (0.63,1.28)	0.88 (0.62,1.25)	0.89 (0.63,1.26)	0.91 (0.64,1.29)
Low		1.00	1.00	1.00	1.00	1.00
Social cohesion						
Low		0.77 (0.55,1.08)	0.82 (0.58,1.15)	0.76 (0.55,1.06)	0.80 (0.57,1.12)	0.85 (0.60,1.20)
High		1.00	1.00	1.00	1.00	1.00
Neighborhood problems						
High			1.69 (1.20,2.37)			1.63 (1.16,2.28)
low			1.00			1.00
Neighborhood relative SES						
Higher than average SES			1.03 (0.68,1.58)			1.00 (0.64,1.57)
Close to the average SES			0.84 (0.56,1.25)			0.83 (0.55,1.27)
Lower than the average SES			1.00			1.00
Linking social capital						
Never participated in groups activities				1.34 (1.01,1.77)	1.34 (1.01,1.78)	1.28 (0.96,1.70)
Participated at least once				1.00	1.00	1.00
Social support						
High					0.56 (0.43,0.73)	0.57 (0.44,0.75)
low					1.00	1.00

[a] Odds ratio and 95% confidence intervals

Model 1: Adjusted for women's age, country of birth, status at interview, education, family income, and level of religiosity

Model 2: Adjusted for collective efficacy (informal social control, social cohesion) and socio-demographic variables in Model 1

Model 3: Adjusted for collective efficacy, neighborhood problems, neighborhood relative SES and socio-demographic variables in Model 1

Model 4: Adjusted for collective efficacy, linking social capital and socio-demographic variables in Model 1

Model 5: Adjusted for collective efficacy, linking social capital, social support and socio-demographic variables in Model 1

Model 6: Adjusted for all variables in previous models

(2001) suggestion that IPV is different from social or community crimes and should be studied in relation to other theoretical frameworks, such as feminist theory [17]. Feminist theory focuses on imbalanced gendered power relations [58]. Arab society is dominated by patriarchal ideology, which demands obedience to the norm and asserts men's control over women. Within this ideology, IPV is not perceived as "deviant behavior" or a crime. Rather, IPV is viewed as a social norm that should be maintained by those who feel a part of the Arab collective, including women [59, 60]. IPV thus becomes a family matter in which neighbors should not meddle [59, 61]. Although subsections of Jewish-Israeli society also justify IPV, Arabs hold more positive attitudes toward IPV [43].

Another important finding is that neighborhood problems, neighborhood relative SES, social capital, and social support affected the ethnic gap in IPV, but did not affect collective efficacy when they were introduced in the multivariate models. This is not consistent with previous research [16]; however, our results show that neighborhood problems, neighborhood relative SES, linking social capital, and social support are independent measures of a neighborhood that might have a direct effect on the association between ethnicity and IPV, not through collective efficacy. The effect of neighborhood relative SES result on the ethnic gap in IPV lends support to studies showing that higher concentration of neighborhood poverty (or economic deprivation) is associated with increased risk of IPV [24, 62–64].

Arab localities and neighborhoods in Israel have lower neighborhood SES. Suffering long term from discriminatory policies, segregation, and lack of resources, Arab neighborhoods are relegated to poverty [35]. Our measure of neighborhood SES was derived from Census data [34]. However, we were not able to compare the absolute SES between Arab and Jewish neighborhoods, as most Arab participants live in lower SES neighborhoods, and most Jewish participants in medium-high neighborhoods. We therefore created an ethnic-relative measure of neighborhood SES. We found that only women living in neighborhoods with a relative SES close to their ethnic group average had lower IPV. This might indicate an important role of neighborhood SES in IPV: Women living in neighborhoods socioeconomically similar to their ethnic group average were more protected from IPV than women living in neighborhoods that are socioeconomically different from (or untypical of their ethnic group). This finding suggests that future research in neighborhood studies should compare IPV to SES inequalities within neighborhoods, especially in comparative research into ethnic groups who live in separate neighborhoods. Furthermore, the SD theory defines heterogeneity as diversity of ethnicity or residency status (e.g., immigrant or non-immigrant) in a neighborhood [7]. The ethnic composition of the Arab and Jewish neighborhoods is very stable. This ethnic stability might have contributed to the persistence of lower SES (high unemployment and lower incomes) and segregation (lack of resources and services) in Arab neighborhoods in Israel. This, in turn, might have contributed to higher IPV. Indeed, higher residential stability in previous research has been associated with higher IPV [24].

The other neighborhood feature we measured was neighborhood problems. Our data were derived from women's answers about social or community disorder in the neighborhood (e.g., crime, noise, police violence, etc.). Our finding was that neighborhood problems were associated with increased IPV and types of IPV (physical, social, and emotional). While SD theory suggests that neighborhood deprivation and problems might reduce social control [10] and that this might be associated with IPV, our results suggest a direct effect of neighborhood problems on IPV unrelated to social control, as the former was not associated with IPV. This result might reflect lower levels of neighborhood informal social control Arab women reported compared to Jewish women. Worth mentioning here is that over the past decades, Arabs in Israel have been undergoing rapid social transitions to semi-urban social structures and lifestyles, which might have increased neighborhood problems and community violence, and deepened the lack of resources and policies emanating from government to protect them from violence [35]. Living in segregated neighborhoods with limited services and resources due to discriminatory policies can intensify neighborhood problems, weaken social control, and lead to community crime, which was related to higher IPV in our study among Arab women compared to Jewish women. Reducing IPV in the Arab minority requires efforts to lessen neighborhood problems and improve the SES of Arab neighborhoods.

To examine the effect of social ties on the ethnic gap in IPV, we used linking (participation in social group activities) and bridging social capital (social group membership) and social support. Bridging social capital was not associated with IPV and therefore was not used in the multivariate analysis. However, linking social capital, which indicated active participation in group activities, was a protective factor from IPV. Women who participate in at least one social group activity were more protected from any IPV and from physical IPV, though not from emotional IPV. This finding might suggest that women's activism is protective from IPV, an insight that aligns with feminist theory [17, 58], as discussed above. However, these results contradict Canadian research findings that higher neighborhood community-group participation was associated with higher IPV [65]. Perhaps women exposed to higher IPV are more active in social groups. More research is thus needed to confirm the direction of this association.

The other measure on social tie in our study was social support, defined as any material, instrumental, or emotional support a woman receives from her social environment. Social support was a protective factor from any IPV and from types of IPV among women and reduced the ethnic gap of any IPV and types of IPV. The protective effect of social support on the ethnic gap in IPV has been previously reported [25]. Notably, in the current study, the protective effect of social support from IPV was higher for social IPV than for other types of IPV (emotional and physical). Social IPV includes social isolation that limits women's contacts from family and friends [66]. This hints that in order to benefit from social support, a woman needs larger social networks. Previous research has shown that social ties and social networks, such as family and friends, are associated with

lower exposure to IPV [24]. Thus, direct, practical support seems to be effective in protecting women from IPV. Examples include physically separating women from abusive partners, providing shelter, and psychological support. Social support has also been shown to have a buffering effect from mental health sequelae among women experiencing IPV [67]. Interventions to reduce IPV among Arab women therefore need to include elements that enhance social support.

Finally, while none of the factors in our study could fully explain the large ethnic gap in IPV between Arab and Jewish women in Israel, our findings support the use of other structural dimensions of SD theory, including neighborhoods SES and problems, and social capital theory, but far less the collective efficacy measures. As noted, lack of associations with collective efficacy and the strong contribution of women's activism (linking social capital) might also suggest that feminist theory should be the preferred tool to analyze the excess of IPV among Arab women living in a society dominated by patriarchal ideology. Social capital in the form of women's social participation and activism, together with social support, might protect Arab women from IPV, while neighborhood problems can increase the likelihood of IPV and therefore should be eliminated.

Future studies on the ethnic gap in IPV in Israel can focus on other contextual elements, particularly the cultural and sociopolitical context of women's lives in the Arab society. Previous research has suggested that political violence is associated with family violence among Palestinians in the West Bank [68]. This might be applicable to minority Arab citizens in Israel, who also suffer from institutional discrimination [35, 69]. Another line of investigation would be to study attitudes toward IPV. Studies of Arab women have shown situational approval for IPV, such as in cases of infidelity [59].

Study Strengths and Limitations

Ours is the first extensive study in Israel to date on neighborhood social capital and the ethnic gap in IPV. However, due to its cross-sectional nature, we cannot determine causal relationships. We are also aware that self-reporting can lead to underestimation of true IPV prevalence. Since most women of reproductive age in Israel visit the free, accessible MCH clinics for well-baby follow-up and immunizations, it is unlikely that a significant selection bias was introduced. However, health care utilization could be associated with stronger social capital and less IPV. Thus, prevalence of IPV, as well as the association of collective efficacy and IPV, might be underestimated. Moreover, since interviews were conducted in Hebrew or Arabic, a language barrier could have excluded some immigrants, which would affect the representation of women who experience violence. In practice, only a few immigrant women could not be interviewed due to language difficulties. Except the measure of neighborhood SES, which was an aggregate variable derived from Census data, the other neighborhood measures were derived from the women's own answers about how they perceive their neighborhood. While some of the neighborhood measures (social capital and social support) were derived from women's answers, it reflects participants' views of the community social interactions, all of which reflect neighborhood-level characteristics. Future research can build on aggregate data for these measures.

Conclusions

Results of the current study might have important theoretical implications for the role of social disorganization theory (SD) and social capital (bridging and linking) in explaining the excess of IPV among Arab compared to Jewish women in Israel. The components of collective efficacy, a central concept in SD theory, did not help explain this gap, suggesting that IPV is a unique problem requiring different explanations than community or street violence. This difference begs for another theoretical approach. Feminist theory of gender imbalances seems apt, especially as we found that women's social activism (higher linking social capital) was associated with lower IPV. Variables capturing structural neighborhood features (relative SES and problems) were more important in explaining the IPV ethnic gap and need attention from policy makers. Interventions to reduce IPV among Arab minority women should therefore focus on improving women's neighborhood structural environment and shoring up social support for them. This is in addition to root changes that must take place within patriarchal ideology.

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