A global index for measuring socio-spatial segregation versus integration

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ABSTRACT

The article suggests a global index that measures segregation/integration in social space on one continuum. We assume that social space is the context of human agency, stimulating some modes of action and turning down other modes of action, but still leaving a room for active agency. Accordingly, we introduce the concept of socio-spatial lifestyle and we define segregation/integration as one aspect of socio-spatial lifestyle. The index is multidimensional relating to residential and activity spaces and to the sources of recruiting social, cultural and emotional capitals in either intra or inter ethnic sources.

A case study of Arabs in Israel is tested showing the relatively high segregation of Arabs in terms of accumulating social capital even when Arabs commute to Jewish spaces and live in Jewish neighborhoods or mixed cities.

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Introduction

Socio-spatial segregation is one of the most intensively studied issues in social and urban geography. It characterizes most modern cities and is widely perceived to be a social problem. It is argued that segregation denies social groups from access to infrastructure and services, and reduces job opportunities and social contacts; and also exposes segregated groups to stereotypes, marginalization, deprivation, violence, exclusion, and isolation (Caldeira, 2000; Massey & Denton, 1988). Segregation studies became major sources of information for the formulation of social integration policies based on the assumption of direct and simple associations between the spatial and the social dimensions of segregation. Accordingly, a multitude of studies called for the dispersal of members of segregated groups in space as a mean to enhance social integration (Mustard and Ostendorf, 2014). This assumption is rooted in Durkheim's positivist legacy, which views the spatial dimension as a concrete manifestation of abstract social structure.

Much of the literature on measuring segregation articulates simple aggregate indices that allow for a worldwide comparative analysis of levels of spatial segregation in different places (Bell, 1954; Duncan & Duncan, 1955; Liberson, 1981; Massey & Denton, 1988; Morgan, 1975; Morrill, 1991; Reardon and O'Sullivan, 2004; Wong, 1993). Global indices characterize residential patterns of the population divided into several social groups in a city or city region by means of one number; local indices process a residential pattern by means that describe the segregation of locality in regards to its adjacent space. Historically, segregation indices were developed in several stages, starting from simple ones that describe uneven distributions of social groups in space to more complex ones that consider more than two social groups, vary in conceptualization of space, account for hierarchy of spatial units, and characterize segregation on different scales.

Critical discussion led to improvements in the accuracy of the indices (Reardon and O'Sullivan, 2004; Wong, 2005), and also to questioning the indices' basic assumptions (Harvey, 1989a, 1989b; Kwan, 2009, 2013; Ruiz-Tagle, 2012; Schnell, 2002). The paradigmatic critique of segregation models questions the isomorphism between society and space, and calls for a multidimensional approach to socio-spatial segregation. The latter considers residential distribution, social networks, activity schedules, and other social and cultural aspects of daily life as loosely-correlated aspects of an individual's life that, in the time-space of highly mobile modern urban life, are weakly, if ever determined by the individual's residential location.

In this paper, we suggest an alternative model for characterizing segregation of a social group, in an attempt to develop a novel approach to identifying social segregation and integration as two poles of one continuum. The paper starts with the characterization of the traditional indices as a basis for their critique, followed by the

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suggestion of an alternative index of spatio-temporal segregation versus integration, and a demonstration of the operation of the proposed index in the case of Arabs in Israel.

Segregation indices

Segregation indices have been developed in three main stages. At the first stage, dissimilarity (Duncan & Duncan, 1955) and exposure/isolation (Bell, 1954) indices were developed, presenting two complementary aspects of the residential distributions of particular social groups. These indices were extended to estimate segregation of several social groups that differ from each other on a nominal scale, like the case of ethnic and racial segregation, or that differ from each other on an interval scale, like the cases of socio-economic groups (Jargowsky, 1996; Morgan, 1975). Dissimilarity indices, popular in 50s and 60s, have been criticized as over-simplified. White (1983) was the first to raise the checkerboard problem, according to which the distribution of segregated areas in space was not considered.

The second generation of indices took into account the distribution of members of segregated groups in space, and the probability for them to encounter either members of their own group or members of other groups in spatial units other than their own ones, based on a distance decay function (Jakubs, 1981; Morgan, 1983; Morrill, 1991; Wong, 1993, 1998). Scholars like Jakubs (1981) and Morgan (1983) developed segregation indices that measure the distances that residents would have to move in order to reach equal spatial distribution to one of the majority. Scholars like Morrill (1991) and Wong (1993) further diversified segregation indices by taking into consideration the characteristics of the areal unit, and accounting for the ratio between perimeter and area and length of common boundaries between neighboring census tracts.

The debate over the spatial meanings of segregation led Massey and Denton (1988) to conclude that five dimensions complement each other in characterizing socio-spatial segregation: evenness, exposure, concentration, centralization, and clustering. Reardon and O'Sullivan (2004) and Brown and Chung (2006) showed that these dimensions should be reduced to two poles, one calculating residential distribution between evenness and clustering, and the other one calculating the probability for interactions with members of other groups between isolation and exposure.

Local segregation indices measure individuals' segregation at various spatial resolutions. Every segregation index can be localized (Benenson & Omer, 2002; Omer & Benenson, 2002). In this way, the series of local indices of "spatial association" that reflect segregation in respect to the hierarchy of areas from the individual building through the urban and census block and to the region can be obtained, (see Anselin, 1995 for review). Based on these indices, Reardon and O'Sullivan (2004) and Wong (2005) tried to deduce from aggregate data about personal behavior by using different kinds of techniques to model human spatial interactions across boundaries by different weighted formulas. The indices of spatial association are expected to solve the problem of the impact of the basic areal unit of the analysis, and expose the impacts of different ecological niches on segregation (Wong, 2002). Extending our understanding of the residential pattern, they, however, limit segregation phenomena to the residential pattern, just as the global indices do.

Residential-based models are heavily criticized for lacking theoretical associations between the spatial and the social (Harvey, 1989a) and for taking for granted that space has the power to determine social behavior. In this respect, segregation indices that measure isolation versus exposure can be seen as a first step towards the understanding of the impact of space on social behavior. An assumption that social encounters depend on distance and the use of the distance decay function reflects a higher probability to interact at short distances over longer ones, regardless of the social identities of the others in the encounters.

We argue that isolation-exposure indices still ignore the heavy behavioral component of socio-spatial segregation. As a hypothetical example, let us consider two immediate neighbors who live in the same mixed city. These individuals may develop very different segregation behaviors. The first may exclusively encounter members of his or her ethnic group dispersed all over the city. The second may encounter members of both the same and other ethnic groups within the same daily activity spaces. The residence-based unevenness and exposure measurements for these two individuals may be the same. A second example may be two individuals who live in a mixed neighborhood. The first one moves all over the globe in order to meet only people of his or her own religion or ethnicity. The other spends most of his or her life in the mixed neighborhood encountering members of all religions and ethnicities. Based on these and similar examples, we claim that the focus of segregation studies should be shifted from residential location as determining social behavior to space as a facilitator of social agency. The above-mentioned shifts demand a new approach to measuring segregation versus integration. We detect four attempts to overcome these limitations of the classical models in recent years. The first one focuses on the effects of interethnic encounters in heterogenous communities on inclusion versus exclusion (Valentine 2008). Such studies inspired by contact theory show how interethnic encounters may lead either to racialization of the others or to integration (Leitner, 2012; Valentine and Sadgrove, 2012). The second one focuses on calculating Liberson's dissimilarity index on spaces of everyday life rather than of residence (Wong and Show, 2011). The third one focuses on describing individuals' activities in the context of time space and society (Kwan, 2009, 2013). The forth one focuses on analyzing segregation in aspects of residential and activity spaces and social networks as separate dimensions of socio-spatial lifestyles (Schnell & Benjamini, 2001, 2005).

Following our former approach we define socio-spatial lifestyle by agents' forms of using everyday life spaces while performing social projects/activities associated with standard life routines, or, as we call this by "agents' socio-spatial patterns of everyday life". These routines are based on agents' decisions and choices. The basis for the concept of socio-spatial lifestyle comes from Hagerstrand's (1975) suggestion that associates "social projects" with "spatial paths" and is extended by scholars like Buttimer (1981) who distinguished between Urbanite and Localist socio-spatial lifestyles in Dublin, and by Shapcott and Steadman (1978) who showed that agents perform many of their activities habitually, out of long-term commitments they make within certain cultural milieus. Pred (1989) and Giddens (1991) bridged the gap between human identity and socio-spatial lifestyle by setting a dialectical framework of human inside-outside, present and past-future, and individual and societal aspects of life. Kwan (2009, 2013) followed this conceptual framework in developing her method of measuring socio-spatial segregation.

Giddens' (1984) approach that considers everyday life spaces as the arenas in which the double structuration of agency and structure takes place, set up a theoretical foundation for the paradigmatic shift in segregation studies. From this standpoint, segregation studies should start with the agent embedded in social practices at the meso-level, and in social structure at the macro-level. Giddens (1991) as well as Bauman (1995) and Castells (1996) identified the new spatialities that are restructured in the era of globalization: they show that agents are increasingly exposed to long distance encounters and this causes infiltration of the local and the global into each other, blurring scalar orders and

boundaries. That is, in the era of time-space compression (Harvey, 1989b) when the boundaries between areas are opening up, agents are increasingly exposed to global information via mass media and telecommunication, and may develop lifestyles and identities that are different from those characteristic of the reference groups of neighboring others (Sassen, 1998; Holloway, Rice, & Valentine, 2003; Slevin, 2000). The new social space is characterized by multiple, dynamically varying complex and interacting networks of relationships (Healey, 2007; Hillier, 2008). Human individuals follow different styles of regionalizing their daily lives, opening or closing themselves to telecommunication, mass media, and social networks; all these supplying different kinds of activities and interactions and making residential-based segregation measurements inadequate.

Individuals' interactions, in time and space, have far reaching consequences on the ways they develop their identities and views. Local reference groups become less relevant when individuals are increasingly exposed to a multitude of information that is not directed towards one comprehensive worldview. Those who adjust to the reality of globalization develop strong individualism that guides them in selecting relevant pieces of information and connecting them into their own comprehensive biography (Giddens, 1991; Noy, 1995). Such people develop complex repertoires of identities with low levels of loyalty to any reference group (Amara & Schnell, 2004). In the same time, individuals who are less successful in adjusting to globalization may continue with loyalty to the collective identity of a homogenous reference group (resistance identity in Castells' conceptualization, 2001; Thrift, 2004). In this context, doubts may be raised about the importance of ethnicity or race for meaningful social grouping — ethnicity or race may be salient for some and almost irrelevant for others. Accordingly, residential-based spatial unevenness and isolation of the group as a whole may be irrelevant for socio-spatial segregation of the group members. If the members of any social category are free to adopt a variety of identity repertoires, including creation of their own socio-spatial lifestyles, then there is no reason to assume that their socio-spatial segregation is reflected by the index that is based on average characteristics of residential pattern.

We call for shifting the focus of analysis from the residential pattern of predefined social categories to individual-based spatio-temporal analysis of the individuals' *socio-spatial lifestyles*. In some cases, individuals' social spaces reach out far beyond local neighborhoods to the global horizon, while others remain relatively closed within localities. That is, individuals' and groups' social spaces may essentially overlap if their residential spaces are segregated. As a result, multilayered patterns of social spaces with different levels of segregation may emerge (Schnell & Benjamini, 2005). We, thus, claim that the different dimensions of socio spatial segregation versus integration that relate to spatial, social, cultural, and economic aspects of daily life (Ruiz-Tagle, 2012) have to be characterized separately. The indices of socio-spatial integration should reflect associations between these dimensions, thereby characterizing socio-spatial lifestyles institutionalized among members of social groups (Schnell & Haj-Yahya, 2014).

What could be the characteristics of socio-spatial segregation/ integration in individuals' everyday lives? In what follows, we choose to regard four components of segregation/integration, one spatial and three that describe integration capital. The first one is the spatial, which relates both to residential and activity spaces. The second one is the affective, which is mentioned by existentialist scholars to be a crucial factor in developing a sense of self (terminology) and worldview (Bollnow, 1967; Buttimer, 1977, 1981; Relph, 1974). This includes the sense of at homeness in spaces, which is defined by Relph (1974) to be the essence of place and identity, identity and presentation of identity in designing and decorating ones' house. Several studies show that stronger identification with shared identity by members of minority groups is associated with higher integration in the labor market and in society (Battu and Zenou, 2010) The last two components relate to the accumulation of cultural and social capital as a supplement to the accumulation of economic capital (Bourdieu, 1986). Putnam (2000) bases the argument of social and cultural capitals on the assumption that such forms of capital have externalities that privilege to agents. While Putnam defines the question of social and cultural capital in terms of the energies that individuals and groups invest in order to accumulate knowledge, information, social support norms etc. relevant for their success in life, we transform the question, asking to what extent do agents accumulate social and cultural capital from intra- or inter-ethnic sources. We consider individuals who focus on accumulating social, cultural, and affective capitals from intra-ethnic sources as segregated, and those who accumulate capital from both intra- and inter-ethnic sources as integrated. Since social and cultural capitals are context-related, we adapt our indicators to the context of ethnic integration in major aspects of everyday life practices. In this context, we introduce the concept of 'integration capital' that can be subdivided into social, cultural, and affective capitals. We assume that encounters and friendships with members of other ethnicities and their support represent different qualities of social integration capital (Coleman, 1988). Integrating members may develop both weak encounters with members of other ethnicities, which Granovetter (1983) highlight their importance for accumulating social capital as well as strong contacts which supply sources of support in cases of need. Linkages to Jews, whether they are weak or strong, supply bridging social capital that widens the range of opportunities for exchange of ideas and information from interethnic sources increasing, by thus, their social capital (Putnam, 2000). In accordance we argue that bridging linkages increase inter-ethnic integration, increasing interactions, trust and opportunities for socio-economic mobility. In terms of cultural integration capital, the importance of fluency in the general society's language cannot be underestimated, as well as exposure to media, telecommunication, and cultural traits of dominant ethnicities in society. The importance of media and telecommunication in adults' socialization is supported by many scholars (Giddens, 1991; Slevin, 2000).

Research methods

The studied population

We study socio-spatial segregation/integration of Muslim Arabs in Israel based on the stratified sample of 177 subjects between 20 and 40 years old, with a close to 1 male/female ratio. Roughly, half of the members of each gender group are commuting to Jewish space, while the rest are localists spending most of their time in Arab space. In this sense, the sample is distorted since in reality only 25% of women participate in the labor force, and the majority of the women workers do not commute to Jewish spaces. The subjects reside in three different types of communities: (1) Arab towns, (2) Mixed cities, and (3) Jewish cities, and we amplified the proportion of interviewed subjects in mixed and Jewish cities to enable comparison among the three types of residence. The Arab towns sampled in this study are Tamra, Kabool, and Sachnin, located in the Galilee part of Israel where about half of the Arabs in Israel reside, and Taybe located in the center of Israel. The mixed cities are Haifa, Ramla, and Lod, while the inner and the middle rings of the metropolitan area of Tel Aviv represent a Jewish city. In each of these localities we have randomly chosen 30 persons, maintaining the same proportions of males and females and

localists versus commuters to Jewish spaces. The subjects in each locality were chosen according to random numbers from the water bills in the municipality and names were replaced by the next names when needed in order to maintain the requested proportion between commuters and localists. Refusals to the questionnaires reached 17 percent. As a result, among 177 interviewed subjects, 89 reside in Arab towns where the percentage of Muslims is above 90%, 59 in mixed cities, where the percentage of Muslims is about 8%, and 29 in the Tel Aviv metropolitan area.

In the Arab towns the number of Jewish residents is almost zero, that is, standard indices will show absolute residential segregation of Muslims. In the mixed cities, despite the discriminating policies of the municipality and the government (Yiftachel & Yakobi, 2003; King Irani, 2007), various forms of coexistence have been established (Monterescu, 2007) and the dissimilarity indices for the Arab enclaves vary between 40 and 65%, similar to the range obtained for minorities in many European cities (Falah, 1996; Graicer, 1992; Kipnis & Schnell, 1978; Mustard, 2005). Immigration of Arabs into Jewish cities, including Tel Aviv, is relatively new phenomenon. Some Arab Muslims from highly segregated Arab towns who have privileged professions move to large Jewish cities, distancing themselves from Arab enclaves in these cities (such as the Jaffa area in Tel Aviv).

Data collection and analysis

The proposed index is based on a closed questionnaire of 15 closed questions. Eleven questions aim at extracting information on the main aspects of individual subjects' adoption of segregated or integrated socio-spatial lifestyle, and specifying their tendency to cross intergroup boundaries in major aspects of their daily lives. We classify these 11 questions according to four main components of socio-spatial lifestyles: spatial, affective cultural and social (Fig. 1). Each of the components is constituted of the characteristics that are based on two or three questions. The spatial component is constituted of characteristics exposed by two questions, one related to segregation versus mixing in residential space, and the other to characterizing personal activity spaces. In regards to residential space, we ask about the proportion of Jewish and Arab neighbors at the place of residence in ones daily activity spaces. Daily activity space is characterized by the proportion of active time spent in a standard day, in spaces dominated by Jews. To estimate this proportion for a standard day, the respondents were asked to record their activities during the last day and to add to this list those activities performed routinely but that were not performed during the last day. We introduced the concept of activities in a standard day in which we added to the measured days time per day of less frequent activities and we standardized the results to one.

The affective component relates to the sense of at-homeness in spaces dominated by the majority; to the importance of the Israeli identity as the one that is supposed to be shared by society at large (see Fig. 1). In addition, the subjects' were asked about the sources of inspiration in decorating their apartments, as symbols of their identities. In Arab society only a marginal number of apartments are rented and they are rarely furnished by the owners. Therefore, furniture and decoration represent residents' identities.

In the cultural component, we asked to what extent members of the minority recruit cultural capital from the majority culture in regards to their fluency in the majority language (Hebrew), exposure to majority media, and attitudes toward integration in the majority culture (see Fig. 1).

In the social component we asked to what extent members of the minority group recruit resources from the majority's social networks. We aimed at revealing the existence of links with members of the majority society and at the quality of these links

(Coleman, 1988), and investigated the proportion of encounters with members of the majority society in a standard day, the percentage of friends that belong to the majority society, and the proportion of potential supporters from the majority who can be turned to in cases of need (Jews in our case).

Four questions reflect the socio-demographic characteristics of the subjects: gender, formal education, professional status, and self-report on their household's income relative to the average. The questionnaire has been run by us but it is designed in a way that makes it possible to be included in pools run by survey companies, and distributed via the Internet. Respondents' location and neighborhood properties can be obtained by asking their residential addresses and extracting the data from official statistics at a resolution of census blocks.

The quantitative study has been supplemented by 30 open interviews in which the subjects were asked to respond to their feelings and attitudes towards the aspects mentioned in the questionnaire and to evaluate their relevancy to their life.

The answer template is established as 5 levels on an ordinal scale, with 1 representing segregation, 5 representing integration, and 3 an intermediate position. Questions 1, 2, 3, and 4 are answered in percentages, with answers grouped into five levels according to five equal intervals 0–20%, 20–40%, … , 80–100%. The answers to 11 questions are interpreted as the characteristics of segregation/integration, with 1 representing complete segregation, and 5 representing complete integration. We call these indices "socio-spatial global segregation versus integration indices" (GSI).

The data are analyzed in two steps. First, we present the distributions of the subjects according to all 11 characteristics. Second, we aggregate characteristics. Two spatial characteristics are aggregated as:

$$SP = (R + A)/2$$

where SP is an index of spatial segregation, R is the index of residential segregation and A is an index of activity space segregation

Six indices representing integration capital are aggregated as:

$$IC = (E_{so} + F_{so} + S_{so} + H_c + M_c + B_a)/6$$

where IC is an index of integration capital, E is the percentage of encounters with Jews, F is the percentage of Jewish friends, S is the percentage of Jews in support groups, H is the fluency in Hebrew, M is the exposure to Hebrew media, and B is the sense of belonging.

All eight characteristics are also aggregated

$$GSI = (R + A + E_{so} + F_{so} + S_{so} + H_c + M_c + B_a)/8$$

We then investigate the association between SP and IC, and a set of associations between external variables relating to subjects' income, professional status, formal education, gender, and GSI.

Results

Arabs' socio-spatial segregation versus integration

As mentioned 50 percent of the sample resides in Arab towns, 33% live in mixed cities, and 17% live in Jewish cities (Fig. 2a). The distribution of their activities between Arab and Jewish spaces is evidently pre-determined by the sampling strategy: 42% spend less than 40% of their time in Jewish spaces (segregated according to their activity space), 40% spend more than 60% of their time in Jewish spaces (integrated according to their activity space) and 18% are in an intermediate position (Fig. 2b).
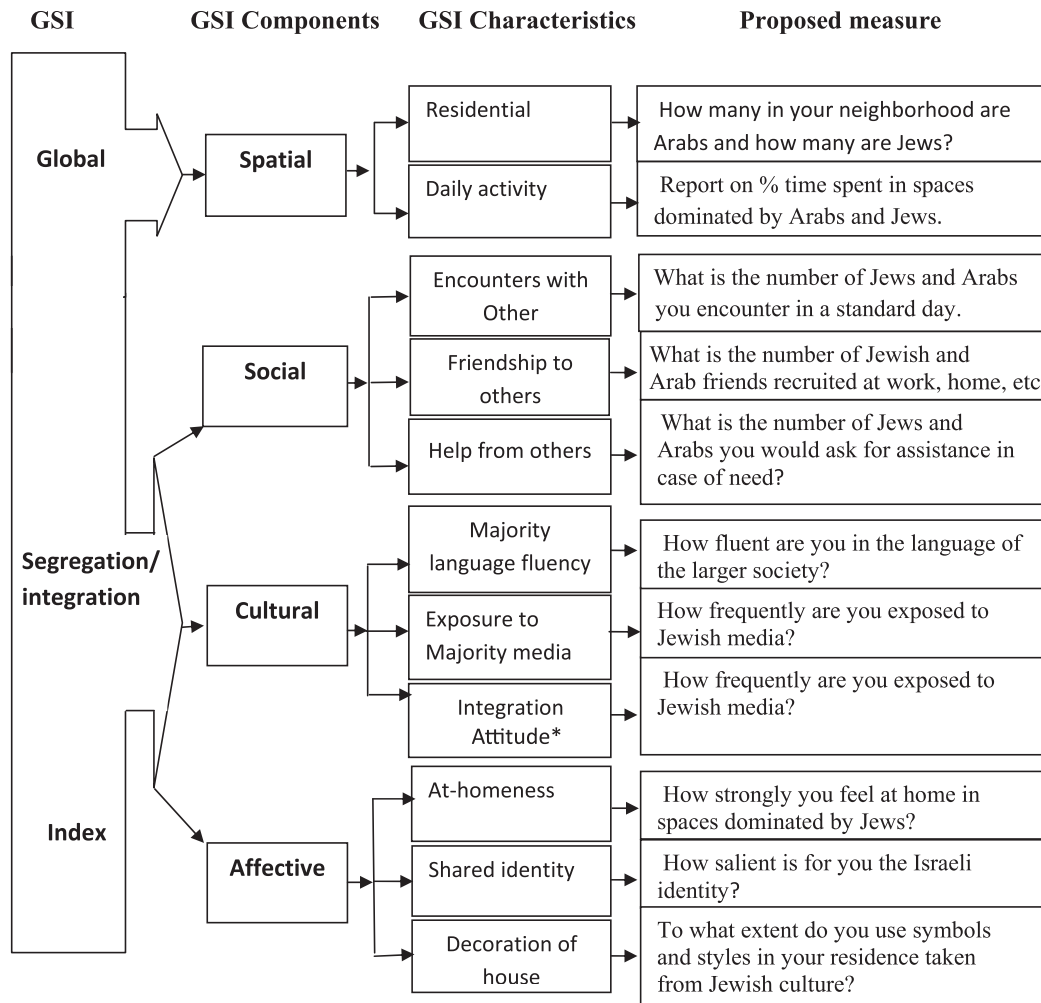
GSI	GSI Components	GSI Characteristics	Proposed measure
Global	**Spatial**	Residential	How many in your neighborhood are Arabs and how many are Jews?
		Daily activity	Report on % time spent in spaces dominated by Arabs and Jews.
	Social	Encounters with Other	What is the number of Jews and Arabs you encounter in a standard day.
		Friendship to others	What is the number of Jewish and Arab friends recruited at work, home, etc
		Help from others	What is the number of Jews and Arabs you would ask for assistance in case of need?
Segregation/ integration	**Cultural**	Majority language fluency	How fluent are you in the language of the larger society?
		Exposure to Majority media	How frequently are you exposed to Jewish media?
		Integration Attitude*	How frequently are you exposed to Jewish media?
Index	**Affective**	At-homeness	How strongly you feel at home in spaces dominated by Jews?
		Shared identity	How salient is for you the Israeli identity?
		Decoration of house	To what extent do you use symbols and styles in your residence taken from Jewish culture?

Fig. 1. The structure of socio-spatial segregation versus integration.
*The questions are as follows: 1) Do you agree to have neighbors from other groups? 2) Do you agree to have a business partner from other groups? 3) Do you agree to have friends from other groups? 4) Do you agree that you or one of your family members will have intimate relations with a member of other group?

Distributions of the replies to the questions reflecting various characteristics of integration capital are presented in Fig. 2c–k:

- Hebrew knowledge: more than 60% of the sample is highly fluent and about 35% are fluent in Hebrew, with no one testifying that they do not know Hebrew (Fig. 2c). This is an evident consequence of institutionalized school curriculum and everyday practice, especially for two third of the sample spending (mostly working) in integrated space (Fig. 2b) during more than 60% of their time.
- Exposure to Hebrew media: about 40% are in an intermediate position, being exposed equally to Arab and Hebrew media, while 20% are exposed mainly to Arab media, and 40% are exposed mostly to Jewish media (Fig. 2d). Most of the subjects mentioned that exposure to Hebrew media is important for them in order to stay updated in the Israeli society where they conduct their daily lives. In addition, they mentioned that they tend to trust news and actuality programs in the Hebrew media more than in the Arab one, with the exception of matters related to the Israeli-Arab conflict. For the latter case, they prefer Arab mass media like Al-Jazeera. Concerning entertainment, the respondents tend more to the Arab media.
- Attitudes toward integration (Fig. 2e): About half of the respondents adopt an intermediate opinion between supporting

or rejecting integration. In our opinion, this expresses the duality of their attitude toward Israeli society, which we will highlight below. About 40% have a positive attitude to integration and 20% are negative.
- Three questions concern social capital (Fig. 2f, g, h). Low levels of contact with Jews (grades 1 and 2) are characteristic of 60% of the respondents, and only about 20% encounter more Jews than Arabs (Fig. 2f). Friendships with Jews shows similar characteristics, with about two thirds of the sample having mainly Arab friends and only about 10% having more Jewish friends than Arab ones (Fig. 2g). In terms of sources of support most Arabs are highly segregated with 45% enjoying less than 20 percent of their support from Jews (Fig. 2h).
- Three questions regard integration in affective capital (Fig. 2i, j, k). About 40% of respondents experience a sense of at-homeness toward Jewish dominated spaces, and 40% experience intermediate feelings to these spaces, with only 20% experiencing strangeness there (Fig. 2i). In contrast, close to half of the respondents indicated the lowest level of their identities as Israeli, and only 15% indicated their Israeli identity as dominant (Fig. 2j). This falls in line with other studies that demonstrated that Israeli Arabs perceive their Arab identity as representing their cultural affiliation, Palestinian as representing their national affiliation, and Israeli as representing their civilian
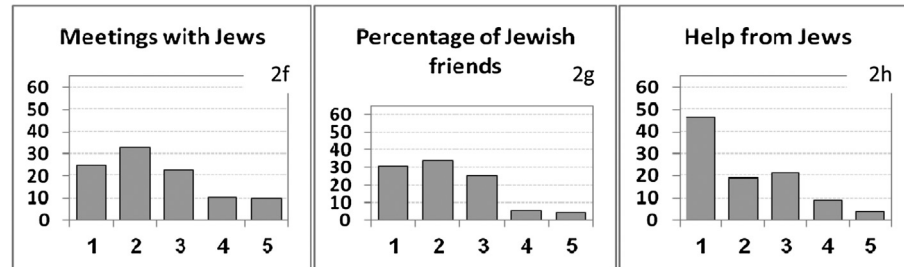
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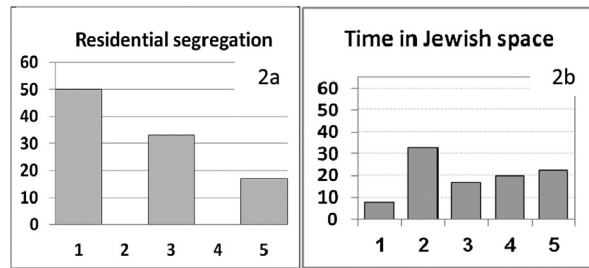
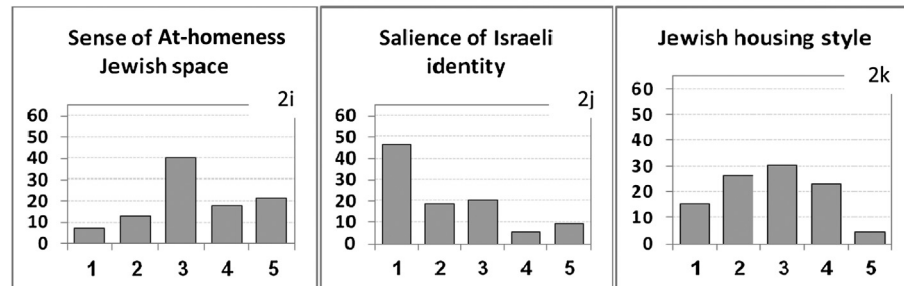Cultural capital
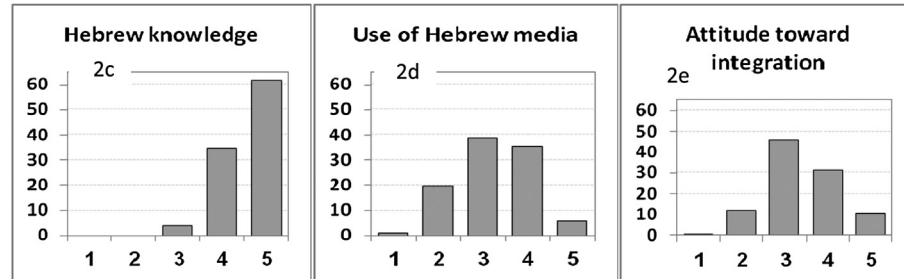
Social capital

Affective capital

Fig. 2. Distributions of the GSI characteristics.

identity, but assigning to the latter low levels of salience due to their feeling of deprivation of civil rights (Amara & Schnell, 2004; Schnell & Haj-Yahya, 2014). In terms of symbolizing identity at home (Fig. 2k), ca. 35% tend to an Arab-oriented decoration style and almost the same percentage is inspired by Jewish style. This is despite Arab architects' evaluations that the vast majority of homes are decorated according to Jewish-Western styles and not Arab ones. We interpret this as the result of Jewish influence on Arab identity and culture on the one hand, and the resentment of these influences on the other hand from fear of losing the unique Arab Palestinian identity. In

our view this dilemma also clarifies the dual attitude toward integration in Israeli society.

- In calculating an average grade for all eleven indicators (GSI), it appears that Arabs in Israel tend to concentrate into an intermediate position between segregation and integration. Seventy two percent of the sample are in an intermediate position (3 in the ordinal scale), 19% tend to segregate (grade 2) and 9% tend to integrate (grade 4). We characterize each individual by a profile composed of the 11 indicators, and use these profiles as the data for the analysis of Arabs' structures of segregation and integration in Israeli society.

Styles of accumulating integration capital

Our analysis of socio-spatial segregation/integration in Arab society in Israel is based on Z-scores.

We normalize the characteristics of GSI and consider their Z-scores:

$$z_i = (x_i - m_x)/STD_x$$

where x_i is the characteristic x value for the subject i, m_x is a sample average and STD_x standard deviation. We then divide the analysis into the two spatial characteristics and the nine integration capital characteristics. We test the reliability of the integration capital characteristics based on Cronbach's alpha in order to choose those characteristics that are scalable out of the 9 characteristics of integration capital. Cronbach's alpha for the 9 characteristics is 0.45 but after excluding 3 indices — attitude toward integration (cultural group), the salience of Israeli identity (affective group), and Jewish inspiration in decorating the house (affective group), Cronbach's alpha increases to the level of 0.67. We consider the three excluded indices as stated declarations about integration, and the six reliable indicators as related to integration behavior. The analysis of integration capital (IC) is thus related to the six indices: fluency in Hebrew, exposure to Hebrew media, sense of belonging to Jewish spaces, percent encounters with Jews, percent Jewish friends and percent Jews in support groups.

In order to capture the differences between the more and less integrated subjects, we divide the sample according to the Z-scores (Z-score based IC), into three groups — 20% of the individuals having the lowest IC, 20% having the highest, and the remaining 60% around M_STD. The average profiles for those three groups are presented in Table 1 and the subjects of each group are segregated, intermediate, or integrated according to each of the six characteristics of IC. The largest deviation from the average is characteristic of fluency in Hebrew, with an average value for the segregate group equal to −1.1. Most significant deviations for the integrated group are according to the fraction of Jewish friends and support from Jews, and we consider these two characteristics of social capital as the critical ones for understanding transition from segregation into integration.

Spatial segregation and accumulation of integration capital

To understand the reasons of socio-spatial segregation/integration, let us investigate the association between three groups of characteristics: (1) spaces of subjects' residence and activity (SP), (2) accumulated integration capital (IC), and (3) socio-demographic characteristics. The relation between SP and IC are first analyzed separately for residential and activity spaces and then in combination. The distributions of IC among residential spaces, according to Kendal's tau-b are highly significant (t = 3.5; df = 4; p < 0.0001). The percentage of integrated subjects grows from ca. 8% in Arab towns to 34% in mixed cities and to 40% in Jewish cities. In the same way, differences between commuters to Jewish spaces and Localists are significant (t = 3.4; df = 2; p < 0.001). However, as Table 2 shows, the influence of activity spaces remains insignificant for

Table 1
GSI profiles for the segregated, intermediate and integrated subjects.

Profile	Characteristic						N
	Encount.	Friends	Support	Hebrew	Media	Belonging	
Segregated	−0.69	−0.80	−0.68	−1.11	−0.66	−0.64	36
Intermediate	−0.10	−0.16	0.13	0.17	0.01	−0.04	98
Integrated	0.87	1.10	0.95	0.57	0.58	0.79	40

Table 2
Association between the spatial and the integration capital characteristics.

Spatial characteristics		Integration capital (%)			Number
Residence	Activity pattern	Segregated	Intermediate	Integrated	
Arab towns	Minority oriented	23	72	5	39
	Mixed	22	67	11	18
	Majority oriented	17	76	7	29
Kendal's tau-b	(T = 0.7; Sig. = 0.51)				
Mixed cities[a]	Minority oriented	25	50	25	24
	Mixed	43	29	29	7
	Majority oriented	14	46	39	28
Kendal's tau-b	(T = 2.9; Sig. = 0.001)				
Jewish cities[a]	Minority oriented	38	50	12	8
	Mixed	40	20	40	5
	Majority oriented	17	31	52	16
Kendal's tau-b	(T = 4.5; Sig. = 0.0001)				
Total	Minority oriented	25	62	23	71
	Mixed	30	50	20	30
	Majority oriented	12	53	34	73
Kendal's tau-b for: residential space	(T = 3.5; Sig. = 0.0001)				
Activity space	(T = 3.4; Sig. = 0.001)				

[a] In calculating Kendal's tau-b for mixed and Jewish cities minority and mixed oriented categories are summed in order to avoid small numbers.

residents of the Arab towns (t = 0.7; df = 2 p ~ 0.5). In contrast, activity spaces influence IC in mixed cities (t = 2.9; df = 2; p < 0.001) and mainly in Jewish cities (t = 4.5; df = 2; p < 0.0001). We, thus, conclude that Arabs who reside in Jewish and mixed cities accumulated significantly more integration capital than the Arabs residing in Arab cities. Mean Z-scores for integration capital in Arab towns was −0.15 relative to 0.06 and 0.35 respectively for mixed and Jewish residential spaces. Since Arab residents are relatively new immigrants in Jewish cities, we cannot conclude whether their tendency to integrate was the reason for their migration, or they became more integrated while residing in Jewish cities; whereas it seems that residents of Arab towns are over-embedded in local milieus to the extent that commuting does not increase integration levels in society at large.

Population distributions by GSI are only marginally associated with economic and professional success: with the rise of professional status, the percentage of segregated subjects decreases from 12% for blue-collar workers to 23% for low white-collar workers, and 30% for academics and professionals (Table 3). However, the highest percentage of integrated subjects is among the low white-collar group. Among academics and professionals, the level of integration is 23%, significantly lower than that of the low white-collar group (Kendal's tau-b test, t = 2.9; df = 4; p ~ 0.03),

Table 3
Associations between professional status and the GSI profile.

Professional status	GSI profile			N
	Segregated	Intermediate	Integrated	
Academics and professionals.	12	65	23	34
Low white color	17	52	31	67
Blue color	30	58	12	41
Total	19	57	24	142
Kendal tau-b:	(T = 4.5; Sig. = 0.0001)			

supporting, therefore, the hypothesis that highly professional Arabs may abstain from integrating into the Jewish society.

The association between GSI and income is weak and the differences are insignificant (Table 4). The subjects whose income is average are least segregated than the two other groups, while the groups of the lower and the higher incomes are constituted of subjects with about similar distributions of GSI. However, these differences are marginal (t = 1.8; df = 4; p ~ 0.07).

Socio-demographic characteristics and GSI

The associations between two socio-demographic characteristics — gender and formal education and GSI are presented in Tables 5 and 6. Men and women are equally integrated to Israeli society (Table 5) (t = 0.7; df = 2; p ~ 0.5) but differ in the forms of accumulating integrating capital — the women's index is essentially lower in terms of recruiting Jewish friends and Jews into their support groups (Table 6). It is interesting to note that women who reach out to Jewish spaces and encounter Jews as frequently as men, make fewer Jewish friends and accumulate fewer Jews into their support groups than men (−0.03 for commuting women relative to 0.32 for commuting men and 0.18 for average men). We hypothesize that this is a consequence of patriarchal control over women in Arab society, even when women are allowed to commute to integrated work places.

Formal education is usually considered a major factor in boosting professional mobility and integration in society. However, we did not find associations between these variables (t = 0.9; df = 4; p ~ 0.4). Of all 8 characteristics, only the percentage of time spent in Jewish spaces (t = 2.4; df = 2; p ~ 0.018) and exposure to Hebrew media (t = 2.9; df = 4; p < 0.01) significantly show that better educated people are more integrated in Israeli society. However, their reaching out to Jewish space and their exposure to Hebrew media does not provide any advantage in accumulating social integration capital or increasing their income in the labor market.

Discussion and conclusions

In this article we suggest a global index that measures segregation/integration in social space on one continuum. We assume that social space is the context of human agency, stimulating some modes of action and turning down other modes of action, but still leaving a room for active agency. Accordingly, we introduce the concept of socio-spatial lifestyle and we define segregation/integration as one aspect of socio-spatial lifestyle in the same way that the radius of everyday life activities orbit and the degree that different aspects of agents' activities are interwoven into each other represent other aspects of socio-spatial lifestyle (Buttimer, 1981; Fied, 2000; Schnell, 2004).

In search for a relatively simple and tangible index, we chose to focus the analysis on residential space at the level of local community, activity space at the levels of localists who spend most of their socially active time in Arab spaces and commuters to Jewish

spaces, and on three forms of integration capital. From the spatial perspective, most studies focus on residential spaces in hierarchical levels assuming that residential space has the power to determine social life. However, an increasing number of studies focus on the relevancy of activity spaces to the understanding of segregation in the age of high mobility (Kwan, 2013; Wong, 2005).

This study exposes the relevancy of both residential and activity spaces as well as interactions between them to the accumulation of integration capital. However, space does not gain the power to determine forms of accumulating integration capital. Arab subjects were widely distributed on all characteristics of GSI except for fluency in Hebrew. Furthermore, they adopted a wide variety of forms of accumulating integration capital to the extent that it was difficult to expose some dominant profiles that could have been planarily ordered. This result supports our argument that while space matters, it does not gain the power to dominate human agency.

In studying residential space we focus on the hierarchical level of local community. Future and more detailed studies will have to test the impact of residential spaces on accumulation of integration capital at the different hierarchical levels. In the meantime, our results are in line with Valentine's (2008) study of the relevancy of contact theory to the understanding of segregation, in which she shows that in different communal milieus different interethnic relations may emerge, from interethnic integration to racialization depending on local norms, values, and practices. We argue that our study, by exposing a variety of characteristics of segregation/integration, has a better potential to associate integration or segregation to specific factors. Our study of Arabs in Israel shows that social capital — making Jewish friends and Jewish support groups — is the major burden for integration posed on segregated individuals. We show also that gaining cultural capital has only marginal effects on integration for other characteristics of integration capital, blocking mainly women from integrating in society at large.

In our effort to develop a GSI index that analyzes segregation/integration on one continuum, we introduce the concept of integration capital. We borrow from Putnam (2000) the concepts of social and cultural capital, and we transform the focus of our analysis from exposing the resources that people gain in accumulating social and cultural capitals to those resources that people gain in order to integrate in the general society; meaning the ability

Table 4
Associations between income and the GSI profile.

Income	GSI profile			N
	Segregated	Intermediate	Integrated	
Below average	23	60	17	82
About average	13	59	28	39
Above average	21	42	24	39
Total	20	56	24	160
Kendal's tau-b	(T = 1.8; Sig. = 0.07)			

Table 5
Association between Gender and the GSI profile.

Gender	GSI profile			N
	Segregated	Intermediate	Integrated	
Men	21	53	26	87
Women	21	60	19	87
Total	21	56	23	174
Kendal's tau-b	(T = 0.7; Sig. = 0.5)			

Table 6
The differences between the GSI characteristics by gender (overall average is zero for each of the capital integration characteristics).

Capital integration characteristics	Difference between genders	Kendal's tau-b for the difference*
% Encounters with Jews	0.14	0.53
% Jewish friends	**0.42**	**0.02**
% Jews in support group	**0.28**	**0.05**
Fluency in Hebrew	0.028	0.91
Hebrew media	0.14	0.43
Sense of belonging to Jewish spaces	0.12	0.04

* — p < 0.05, high p > 0.3.

of members of minority ethnic groups to develop effective inter-ethnic bridging networks with members of the majority and to master cultural traits needed in performing effectively in the general society. In addition, we relate to the affective aspects of the human sense of belonging to society and place as fundamental aspects of people "being in the world." However, out of the nine deductively preselected indicators of integration capital predefined by us, only six were found to be scalable in Cronbach's alpha reliability test in the case of Arabs in Israel. This result leads us to conclude that further studies on different ethnicities around the world are needed in order to develop an integration capital index of general validity for interethnic comparisons.

Several main conclusions stem from the current study. First, most Arabs are in an intermediate position between segregation and integration. Only a small minority demonstrates a tendency to integrate in Israeli society. Second, even segregated Arabs demonstrate at least a partial tendency to culturally integrate. Third, making Jewish friends and building Jewish support groups are the most segregating aspect among Arabs. Even though many frequently encounter Jews in performing their daily lives the vast majority makes only a few Jewish friends and do not build Jewish support groups. This is true mainly for women. This means that social capital is the most crucial form of integration capital that distinguishes among the three groups of segregated, intermediate, and integrated individuals. It means also that despite Granovetter's (1983) argument concerning the importance of weak networks, encounters with Jews did not necessarily lead to developing Jewish friends and support groups and to integration in general.

Consequently, gaining integration capital has only a marginal effect on mobility in professional status, and almost no significant effect on income. Most Arabs are still deprived in the labor market. Many better educated Arabs are still excluded from prestigious jobs, they are channeled to lower status white-collar jobs and are underpaid relative to Jews (Khattab and Miaari, 2013). Khattab's study that isolates the ethnic penalty aspect of deprivation in the labor market, supports the argument concerning the importance of structural barriers to Arabs' socio-economic mobility in Israeli society. The call to relate both to the aspects of social practices and social structure in understanding segregation/integration has been first introduced by Ruiz-Tagle (2012). This study confirms the importance of structural aspects in addition to those of everyday practices in understanding patterns of segregation and integration. It seems that structural barriers in Israeli society and negative responses to Arabs' integration efforts make it difficult for Arabs to integrate. This is mainly in aspects that require active cooperation from Jews, like developing friendships and support groups with Jews as aspects of social integration capital. The power of structural barriers for integration is also demonstrated by the relations between formal education and integration. It appears that despite better educated Arabs being more exposed to Jewish cultural and affective sources of integration capital, they fail to gain social integration capital from this exposure. By the same token, even when highly educated Arabs succeed in accumulating social integration capital, its effect on their income remains marginal and many of them continue to work in low white-collar jobs. Women also suffer from structural barriers that are internal to Arab society. They accumulate very limited social integration capital, even in cases where they are integrated in other aspects. In this respect, we reiterate that most women are either not working or work in Arab towns, and, therefore, they are highly segregated. Our distorted sample stresses the fact that even the small minority of working women who commute to Jewish spaces fail to accumulate social integration capital.

In general, Arabs demonstrate positive attitudes toward integration but this attitude is limited to a degree that it does not threaten their Arab or Palestinian identity. In accordance, those who are intensively exposed to Jewish spaces and who show tendencies to culturally integrate tend also to develop concerns about their ability to maintain their Arab/Palestinian identity, and they refute Jewish influences on styles of decorating their houses.

Patterns of segregation/integration should be interpreted also in the context of global structures. The compressed spaces of the era of globalization are characterized by high human mobility performed by multitudes of communication means with each of them being subject to different levels of distance fraction and power to transgress boundaries leaving wider room for agents to practice their active agency (Urry, 2007). In this reality there is no reason to assume isomorphism among the different aspects of GSI. For example, to some extent social networks may be built and maintained via the Internet and the formation of identities may be stimulated by mass media, opening possibilities to loosen the Gordian knot assumed in traditional models between society and space and their susceptibility to the tyranny of mathematical functions of distance decays.

In the case of Arabs in Israel, Arabs started to visit other Arab countries after the establishment of peace with Egypt and Jordan, and the opening of doors to several more Arab countries. Arab citizens of Israel started to make pilgrimages to Mecca and Medina. Despite this, encounters and telecommunication with Arabs in the Arab world have remained minimal. Even networks with the Palestinians in the West Bank have remained of secondary importance despite their strong affect to the Palestinian suffering. Arabs repeatedly mention that, despite all their solidarity with the Palestinians in the occupied territories and their feelings of belonging to the Palestinian national identity, their destiny is determined in Israel. Therefore, they feel the need to be updated through the media about developments in Israel, the need to develop social networks in Israeli society, and the need to be involved in public life in Israel (Schnell & Haj-Yahya, 2014). Our results demonstrate the importance of exposure to Hebrew media as an essential factor of integration.

The positive but weak associations among the characteristics of segregation/integration in the case of Arabs in Israel found in this study is partly confirmed in our former study on the structure of social spaces in Tel Aviv-Jaffa that studied the segregation of eleven ethnic groups along three aspects of GSI (Schnell & Benjamini, 2005). Our study shows that while both residential and activity spaces matter, they do not determine socio-spatial behavior. Furthermore, they interact with each other. Unlike in mixed cities, in Arab towns, residential spaces dominate Arabs' tendency for segregation/integration, overcoming the effect of activity spaces. This means that Arabs in Arab towns are highly embedded in local milieus that imprison them in segregated niches, whereas Arabs in mixed cities and Jewish cities are subject to the effect of commuting into Jewish spaces, which stimulates integration.

The study join a set of attempts for a new paradigm of segregation and integration studies (Kwan, 2013; Wong, 2005; Valentine, 2008). It contributes to the analysis of segregation versus integration in activity spaces in addition to residential segregation. It contributes to uniting social and spatial analysis under one conceptualization, by introducing the concept of integration forms of capital. It highlights the relevancy of mass and telecommunication in understanding segregation versus integration in everyday life. The study also highlights the importance of starting the analysis from individuals aggregating at a second stage in order to expose different styles of integration and segregation within an ethnic group as well as the importance of analyzing each aspect of the model separately since they are not in isomorphism with each other as a major characteristic of spaces in a global reality.

Two aspects need further elaboration in developing a global model for intercultural comparative analysis of segregation versus integration. First, application of the suggested methodology on the analysis of additional ethnic groups. Second, adding complexity to the ways space is analyzed by distinguishing among different spatial scales etc. Third, further verifying the scalability of the indices of forms of capital based on empirical works in different case studies.

Acknowledgments

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