Cracks in the Melting Pot? Religiosity & Assimilation Among the Diverse Muslim Population in France

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Abstract

The maintenance of high religiosity levels among Muslim youths in Western Europe constitutes a puzzle in need of an explanation. Focusing on France and using a new empirical strategy for the quantitative study of cultural difference between heterogeneous populations, this study first demonstrates that French Muslims form a diverse group, yet one with a consistent and sizable "religiosity differential" resisting intergenerational assimilation to native levels. It then formulates and tests five hypotheses to explain the second generation's delayed religious assimilation. Material insecurity, the perception and self-report of discrimination, parental religious socialization, transnational ties with the origin country, and neighborhood ethnic segregation are all influential, but with an uneven impact across subgroups within native and Muslim populations. Together, results suggest that the religiosity differential stems from a mixture of cultural transmission from the context of origin and blocked acculturation due to stratification and social closure in the context of destination.

1 Introduction

Longstanding policy and scholarly discussions surrounding the integration of Muslim immigrants and their children have firmly established religion - rather than race or language as the primary ground for difference and cultural accommodation in Western Europe (Zolberg and Loon 1999, Brubaker 2015). An impressive array of recent studies has documented the legal and institutional aspects of the integration of Islam (Laurence 2012, Carol and Koopmans 2013); the various forms of prejudice Muslims face (Franz 2007, Safi and Simon 2013, Adida, Laitin and Valfort 2016, Helbling and Traunmüller 2018); the salience of the Muslim-non Muslim boundary in shaping friendship and marriage patterns (Leszczensky and Pink 2017, Carol 2016); and European Muslim's subjective belonging as cultural and racial minorities (Kapko 2007, Bleich 2009, Maxwell and Bleich 2014, Beaman 2015b; see Drouhot and Nee 2019 for a review).

At the very heart of this new body of scholarship lies a simple social fact: Muslim immigrants and their children appear to stand out in the secular European context by the intensity of their religious beliefs and practices (Bisin et al. 2007, Maliepaard, Lubbers and Giesbert 2012, Kashyap and Lewis 2013, Lagrange 2014). Yet despite the rise in scholarly publications on the integration of Muslims in Europe in recent years, such religious vitality - including among the native born 2nd generation - remains to be explained. In this article, we focus on precisely characterizing the extent, composition and sources of such a purported religiosity differential between Muslim populations and natives in France - the European country with the highest relative share of self-identified Muslims.

Our contribution in this paper is twofold. First, we formulate and implement a novel empirical strategy for the quantitative study of cultural difference - the Inductive Subgroup Comparison Approach, a probabilistic strategy relying on fuzzy clustering and Monte Carlo simulation to detect distinct segments of the French native population corresponding to distinct assimilation pathways. This approach allows us to compare Muslim and immigrants from other religious affiliation to socially similar members of the native population and to account for heterogeneity and social structure among both native and immigrant groups - thus avoiding essentializing either as bounded and homogeneous (Alba and Nee 2003, Brubaker 2004, 2013, Vertovec 2007).

Secondly, we analyze and explain the religiosity differential as a type of cultural difference that is both imported from the context of origin and reproduced in the context of reception. In so doing, we bring together separate strands of the literature in a coherent analytical framework to study the sources of the religiosity differential and parse out their relative weights. Empirically, we show that the religiosity differential among second-generation Muslim populations is generally high, but heterogeneous across Muslim subgroups. It is principally driven by Muslims' higher propensity to think that their religion is an important part of their personal life, and to follow its religiously imposed dietary constraints. By contrast, Muslim populations do not stand out in terms of religious attendance or propensity to wear visible religious signs. Regression models within clusters explain away much of the observed differential, and predicted values show that a parsimonious set of variables are associated with the maintenance of high religiosity among the second generation. Overall, the religiosity differential can be characterized as a mixture of cultural import from the context of origin - as seen through the influence of parental socialization and transnational ties - and blocked acculturation - as seen through the influence of material insecurity, discrimination and segregation. Importantly, the analyses show that the explanatory power of particular variables varies across subgroups. This illustrates how different, parallel processes are at work in producing cultural difference for different segments of the Muslim population.

The rest of the article is organized as follows. We first define assimilation as a process of cultural embeddedness in the country of destination, and one implying secularization in the European context and the French context in particular. We then discuss recent evidence of delayed religious assimilation among Muslim immigrants and their children. Drawing on the literature on immigration, ethnicity and race, we outline five possible mechanisms to account for this phenomenon: material deprivation, reactive religiosity, family socialization, transnationalism, and replenished religiosity. We proceed to detail the theoretical motivation and technical implementation of our analytical strategy. Shifting to empirical analysis, we inductively identify subgroups in a representative sample of the French native population in order to systematically match a sample of first- and second-generation Muslims living in France to a reference category against which we compare and contrast their religiosity. We then model religiosity within each native-immigrant matched subgroup to understand the processes at work behind the second generation's religiosity differential. The final section of the article discusses the significance of the empirical results as well as the payoffs to the new empirical strategy we develop and implement to study cultural difference without essentializing social groups.

2 Assimilation: definition, theory & practice

2.1 Religion and assimilation: what to expect for 1st & 2nd generation Muslims?

Assimilation can be conveniently defined as a process of increasing social similarity between native and immigrant populations taking place over one or more generations. Such a process is multidimensional - consisting of structural (labor market attainment and social mobility), relational (friendship networks and union patterns) and symbolic (identity and cultural practices in terms of language and religion) components (Drouhot and Nee 2019). Symbolic dimensions play an important signalling role in that process: assimilation is complete when ethnic origins and cultural difference cease to affect the life chances of immigrants and their children, so that such differences are circumscribed to "symbolic" and "optional" forms such as foods, dress, names, etc (Gans 1979, Waters 1990, Alba and Nee 2003, Drouhot and Nee 2019).

The largest stride towards assimilation with natives occurs among the 2nd generation grown and socialized in the destination country, with variations across groups and time periods regarding progress or stagnation in the third generation (Gans 1962, Gordon 1964, Alba and Nee 2003, Kasinitz et al. 2008, Jiménez 2010). In the American context, where levels of religious practice and identification have historically been high, one aspect of assimilation is the crystallization of religion as an important aspect of identity and community. As Kasinitz et al. (2008) remark in their study of the second generation in New York City, the US-born children of West Indian, Chinese, Russian, Indian or South American origins are generally more religious than their parents (Kasinitz et al. 2008, 264-272) - something to be expected in a country where atheists have historically been seen as the true "cultural others" (Edgell, Gerteis and Hartman 2006). In the U.S. in sum, to believe is, by and large, to belong.

In Europe, by contrast, secularization has been part of the broader movement of modernization. As such, increasing social similarity with natives means decreasing levels of religious engagement for immigrant newcomers. Accordingly, contemporary survey research shows that first generation immigrants' religiosity lowers over the life course (Van Tubergen 2007, Van Tubergen and Sindradottír 2011). Historical research on earlier migration waves in France shows that the religious practice and identification of Christian immigrants from Poland and Armenia and Jews from Russia were initially high but collapsed in the 2nd generation (Noiriel 1996, chapter 4). In short, evidence in the US and Europe shows that immigrants settling in religious countries become more religious themselves, and vice versa. Depending on the cultural context, immigrant religion can thus be a facilitator or a barrier to inclusion and being considered "one of us" (Foner and Alba 2008). Figure 1 illustrate the contextual nature of the religious context of reception by plotting average self-reported religiosity levels based on large-scale, comparable survey data in Europe and the United States.

Figure 1 about here - see page 71

Depending on the context of reception, religious assimilation occurs in several possible directions as a form of cultural embeddedness in the destination country. In the European context in general and the French context in particular where secularization has been particularly powerful, the expectation is unambiguous: we should observe an intergenerational decay in religiosity as second-generation immigrants become less religious, and thus more similar to their native counterparts.

2.2 The empirical puzzle: delayed religious assimilation in France and beyond

The available qualitative and quantitative evidence, however, does not corroborate the assimilation-as-secularization scenario outlined above. The qualitative scholarship has depicted French-born Muslims' subjective religious experience as a mix of underclass-like cultural adaptation to poverty and social exclusion, and a rediscovery and reinvention of their parents' cultural heritage¹ (Lepoutre 1997, Kapko 2007, Kepel 2012a, 2012b). Kepel (2012b) emphasizes religious change among the young members of the 2nd and 3rd generation who practice an Islam based on public displays of identity - by fasting and following Islamic dietary restrictions - rather than spirituality and regular attendance of religious service. Such

¹Appendix A offers a brief primer on the history of Muslim migration in France and Europe.

change notwithstanding, existing quantitative studies show that the 2nd generation's religiosity is surprisingly strong, often as strong as that of their parents (Brouard and Tiberj 2011, Lagrange 2014, Soehl 2016). Brouard and Tiberj (2011) show that the intensity of religious identity and the following of strict behavioral rules stemming from religious texts is much higher among Muslims, regardless of nativity. Lagrange (2014) reaches similar conclusions and talks about a maintenance of religious sentiment in the French-born 2nd generation (Lagrange 2014: 224-230; see also Soehl 2016). This picture differs considerably from the assimilation-as-secularization process documented for earlier waves of Catholic and Jewish immigrants from Southern and Eastern Europe (Noiriel 1996 chapter 4).

Figure 2 plots native-immigrant religiosity ratios across major immigrant-religion groups in France based on the 2008 *Trajectoires et Origines* data on which we rely in this study.

Figure 2 about here - see page 72

Across Christian immigrant groups, the assimilation expectation holds, as seen by a decrease of the immigrant-native religiosity ratio across generations. While the foreignborn are typically about twice as religious as natives, children of the foreign born have markedly lower religiosity. Among Muslim respondents, however, baseline religiosity levels in the first generation are noticeably higher. Moreoever, they do not decrease among the second generation, born and socialized in France. Such a phenomenon of delayed religious assimilation constitutes the core empirical puzzle motivating the present study.

Beyond the French case, a new scholarship on assimilation and religiosity has firmly documented a similar phenomenon of religious vitality among Muslims in Europe. Despite modest evidence of assimilation (Maliepaard, Lubbers and Giesbert 2010, De Hoon and van Tubergen 2014, Maliepaard and Alba 2016), Muslims immigrants and their children's levels of religiosity appear impervious to the secularizing influence of the context of reception, in such diverse national settings as the UK, Belgium, the Netherlands, or Sweden (Bisin et al. 2007, Connor 2010, Güveli and Platt 2011, Fleischmann and Phalet 2012, Maliepaard, Lubbers and Giesbert 2012, Kashyap and Lewis 2013, Torrekens and Jacobs 2016; see Voas and Fleischmann 2012 and Drouhot and Nee 2019 for reviews).

3 Possible mechanisms at work: 5 hypotheses

Our broad review of the migration literature leads us to formulate five, testable hypotheses to potentially explain the puzzle of delayed religious assimilation among Muslim populations in France.

3.1 Material insecurity

One possibility to explain the religious resilience of Muslims in France is to view religiosity as a response to widespread material insecurity. The "insecurity hypothesis" proposes that certain social conditions such as low income are conducive to high stress and high uncertainty, and thus foster the need for structuring narratives provided by the religious experience (Norris and Inglehart 2004). Spiritual life thus compensates for material hardship. The insecurity hypothesis has received empirical support in past studies (Van Tubergen 2007, Immerzeel and Van Tubergen 2013). The economic hardship of Muslim communities in France, as seen through spatial relegation in low income urban areas, is well known and makes the material insecurity hypothesis credible (Drouhot 2020b, Lepoutre 1997, Kepel 2012a).

H1: The experience of material insecurity promotes higher religiosity compared to French natives.

3.2 Reactive religiosity

A second hypothesis considers the effect of feeling alienated as a result of perceiving or experiencing unfair treatment, leading to an increased identification with the stereotyped minority group to maintain self-esteem (Branscombe, Schmitt and Harvey 1999). This hypothesis has been formulated as "reactive ethnicity" within the segmented assimilation framework in sociology (Portes and Zhou 1993, Rumbaut 2008). It has recently been adapted to religion and reformulated to interpret the observed increase in religious identification associated with perceived or experienced hostility from the majority outgroup (Connor 2010, Maliepaard and Alba 2016). Qualitative work on the 2nd generation in France has described the resentment of young Muslims feeling rejected by the rest of the population (Kapko 2007, Kepel 2012a, 2012b, Marlière 2008). In addition, recent experimental evidence from Adida, Laitin and Valfort (2016) has established that there is a distinct and substantial anti-Muslim discrimination on the French labor market. Past work in social psychology differentiates between the effect of perception of diffuse discrimination against one's group and perception of personal discrimination on in-group attachment (Bourguignon et al. 2006), and we are therefore including both in the reactive religiosity hypothesis.

H2: The perception or experience of discrimination promotes higher religiosity compared to French natives.

3.3 Parental socialization

Another mechanism potentially explaining religiosity in the 2nd generation is the influence of parental efforts to transmit their beliefs to their children, producing a phenomenon of inter-generational faith transfer (Hunsberger and Brown 1984). The power of parental religious socialization among Muslim families has been well established in past research (Scourfield et al. 2012, Jacob and Kalter 2013, de Hoon and van Tubergen 2014, van de Pool and van Tubergen 2014, Soehl 2016). Muslim families may emphasize religious transmission more strongly than Christian immigrant groups since they may perceive Catholicism and *laïcité* - two dominant forces in French culture and institutions - as threatening.

H3: Parental religious socialization promotes higher religiosity compared to French natives.

3.4 Transnational ties

The maintenance of transnational ties among 2nd generation can lead to a cultural exposure to the country of origin, which can manifest itself in a stronger religious commitment if religion is salient there. The hybridization of migrant identities between "here" and "there" has been well-theorized, albeit somewhat in parallel with the literature on assimilation (Glick-Schiller, Basch and Blanc-Szanton 1994, Faist 2000). In the case of Muslim specifically, existing research notes a strong transnational identity orientation among many Muslim communities in Europe, and the historical role of mosques and religious leaders funded by foreign government encouraging the maintenance of ties with the old country (Mandaville 2009, Laurence 2012). In France, past research suggest Muslim families maintain particularly intense transnational relationships (Safi 2017). As such, transnational ties between Muslim communities in the old and new country can act as prisms for the transmission of cultural beliefs and norms contributing to a maintenance of the home country's religious culture.

H4: Transnational ties to the country of origin promotes higher religiosity compared to French natives.

3.5 Replenished religiosity

Recent insights on the importance of continuing waves of migration for the assimilation process constitute a fifth hypothesis for the puzzle of delayed religious assimilation. Mainly associated with the work of Tomas Jiménez (2010) on Mexican immigration in the US, the replenishment hypothesis stipulates that a continuous wave of immigrant complicates the adaptation process for later-generation migrants, because it increases their interaction with foreign-born who act as ethnically "authentic" ambassadors for the country of origin - in particular by de-legitimizing the optional or symbolic ethnicity of later generation migrants (Jiménez 2010).

This dovetails with extensive evidence of blocked spatial mobility among the second generation of African origins, who tend to grow up and stay in the same disadvantaged neighborhoods as their foreign born parents (McAvay 2018, McAvay and Safi 2018). Meanwhile, continuous influx of migrants from Muslim-majority countries provides extensive opportunities for exchange between recently arrived Muslim immigrants and more established migrants - including the French-born 2nd generation - on the "true" practice of Islam and the most authentic way to be a Muslim, one presumably involving a high degree of religiosity imported from the context of origin and transmitted through social influence. In Germany, Kelek's (2011) work on imported brides from rural Turkey showcases the weight of continuous migration on the vitality of the culture of origin in segregated Turkish neighborhoods. A replenished religious culture can stall opportunities to craft a hybrid, possibly less intense religious practice borrowing elements from both the context of origin and the context of reception.

H5: Continuous interaction with recent immigrants from Muslim-majority countries promotes higher religiosity compared to French natives.

It is useful to classify these hypotheses as capturing two types of mechanisms. On one

hand, parental socialization (H3) and transnational ties (H4) reflect a dynamic of cultural importing, in which the religiosity differential is exogenous to the French context of reception. Conversely, the material insecurity (H1), reactive religiosity (h2), and replenished religiosity (H5) hypotheses capture the influence of inequality and social closure in France, whereby the religiosity differential is endogenous to the context of reception. Parsing out the relative contribution of these mechanisms to the overall religiosity differential is an additional motivation of the current study.

4 Empirical strategy: a new approach for the quantitative study of cultural difference

4.1 Theoretical motivation

Earlier, Chicago-school inspired work has often envisioned assimilation as a unilinear process of incorporation into a culturally white middle-class core (e.g. Warner and Srole 1945, Gordon 1964), and received much criticism for its inherent ethnocentrism (Glazer 1993; Alba and Nee 2003). A key theoretical contribution of the next wave of theorizing on assimilation - namely models proposed by segmented (Portes and Zhou 1993) and neoassimilation (Alba and Nee 2003) - was to emphasize the internal diversity of immigrant groups, who arrive with different endowments in various forms of capital and from different contexts of origin. Likewise, they emphasized that destination countries are not homogeneous societies but are, rather, divided along multiple lines of differentiation such as space, class and race. In countries with a long immigration history such as France and the US, the "mainstream" is often diverse and complex, and so are assimilation trajectories (*ibid*). Among European migration researchers, Vertovec's (2007) theorizing on the internal complexity of immigrant groups along multiple axes of difference - which he called "superdiversity" - shared a similar emphasis on the importance of population heterogeneity for the study of migration and assimilation phenomena.

An explicit willingness to avoid essentializing minority and majority groups as homogeneous entities with static traits and culture is also commonplace in qualitative immigration research, where in addition to the theoretical impetuses outlined above, influential debates on the relationship between minority culture and poverty have turned intragroup heterogeneity into a recurrent empirical and rhetorical motif for fear of engaging in racial stereotypes (Small, Harding and Lamont 2010).² In the case of Muslim populations specifically, a concern for essentialism and internal variation can be traced back to Said's (1979) famous work on orientalism - the historical perception carried by Western artists and intellectuals of Middle Eastern societies as static and homogeneous in their difference, which Said saw as a precondition and justification for colonialism and cultural imperialism.

Despite what is virtually a theoretical consensus on the importance of intragroup heterogeneity, however, quantitative research routinely relies on samples split by ethnically, racially or religiously defined immigrant groups as the key categories of analysis. The "general linear reality" - a view of the social world turning groupness into a fixed attribute - and average case-focus of regression-based approaches (Abbott 1988) tend to flatten the social structure of the groups under study, and cumulatively contribute to reifying them when the assimilation of various groups is compared side by side in what FitzGerald (2014) has called "ethnoracial Olympics". This is because analyses from samples split by ethnic or religious

² To take just one influential and well-regarded example, Kasinitz, Mollenkopf, Waters and Holdaway (2008, 23) write a preliminary caution in their introductory chapter of their study of the second generation in New York City: "We further recognize it is possible to read group comparisons as stereotypes or even racist generalizations. Let us be clear: any reference to group differences makes groups appear more homogeneous than they actually are. Our young respondents belonged not only to ethnic groups but also to social classes, genders, social groups, and neighborhoods. Like all modern people, they had a multiplicity of interacting social roles and identities. Although a quick reading of a table comparing groups will not always make this apparent, we have tried to remain sensitive to individual variation without losing sight of the real differences that ethnicity makes."

categories yield single estimates depicting a homogeneous picture of group-level processes (Ragin 2000). Relatedly, much, if not all existing work on the adaptation of Muslim immigrants and their children in Europe implicitly conceives of bounded, homogeneous Muslim groups amidst a national, similarly bounded and homogeneous mainstream (see Voas and Fleischmann 2012, Drouhot and Nee 2019 for reviews).

Such a "methodological Islamism" (Brubaker 2013) taking Muslims and other religious categories as the main categories of analysis might be problematic for two reasons. First, researching and accumulating findings on "Muslims" risks unwitting participation in political projects depending on the essentialization of Muslims as one bounded and solidary entity. Second, a concern for heterogeneity is also analytical: single estimates from samples split by religious affiliation might subsume different processes under a single average. Taken together, these concerns call for a new analytical approach for the quantitative study of cultural difference.

4.2 Technical implementation: the Inductive Subgroup Comparison Approach

To translate these theoretical considerations for reflexivity and heterogeneity into empirical practice, we propose a new empirical strategy: the Inductive Subgroup Comparison Approach (hereafter ISCA). ISCA is an empirical application of fuzzy logic (Ragin 2000) to the study of assimilation. It relies on a mixture of fuzzy clustering, Monte Carlo simulation and regression analysis to compare immigrant and native groups as socially comparable subgroups. ISCA consists of three, distinct methodological steps. Through fuzzy cluster analysis - a family of data partitioning techniques from the larger umbrella of unsupervised machine learning (Molina and Garip 2019, Kaufman and Rousseeuw 2005) - the first step is to inductively identify the key subgroups within the native population. These subgroups organize the assimilation process into distinct pathways. In a second step, immigrants are assigned to one of the subgroup making up the native population on the basis of social similarity. In a third step, we test our hypotheses and model assimilation outcomes of interest in these matched immigrant-native subgroups. Thus, ISCA effectively switches the relevant categories of analysis in the assimilation process from nominal³ (here, religious) groups to data-driven subgroups and allows for within- as well as the more traditional between-group comparisons. Figure 3 below compares ISCA with the traditional focus on assimilation as between-group where groups are nominal.

Figure 3 about here - see page 73

ISCA allows for the study of distinct assimilation pathways by taking intragroup heterogeneity among both natives and immigrants into account, and is characterized by three, key features. It is inductive, insofar as subgroups of interest emerge from the data itself rather than prenotions from the researcher. This is a point worth emphasizing: we could decide to compare low income immigrants to low income natives, for example. But we cannot, by definition, know in advance if income is the right dimension to organize our comparison. Additionally, it is possible for several dimensions (income, gender, age, urban location...) to consolidate into subgroups (Blau 1974). In other words, what matters for group heterogeneity may well be specific *configurations* of variables rather than specific variables. ISCA relies on the inherent reflexivity afforded by unsupervised machine learning approaches: while domain-specific knowledge remains key to interpreting results, researchers need not impose assumptions about the structure of the data, or the analytical appropriateness of a given social category in organizing heterogeneity within the data.

³ By "nominal", we mean a group entity designated through a commonsense category. We do not mean "nominal" in a statistical sense, as in "nominal variable".

Second, ISCA is probabilistic because it does not rely on "hard" clustering assignment (such as that obtained with *k-means* clustering) where observations can belong to one cluster only, as such an approach would lead to reifying subgroups themselves and possibly overstate cross-cluster differences⁴. Rather, it relies on fuzzy clustering where membership in each cluster is uncertain and expressed through a membership score, which is then used to assign cases to groups in a stochastic, and - thus truly probabilistic - manner. Lastly, ISCA is iterative. As there exists significant uncertainty around subgroup boundaries (as expressed by membership scores from fuzzy clustering that are balanced), results following stochastic assignment may misrepresent the underlying uncertainty about cluster membership when membership is assigned only once. Thus, ISCA relies on Monte Carlo simulation and multiple iterations of the assignment and modeling steps (steps 2 and 3) to obtain stable results. Rather than a statistical or analytical nuisance, our procedure hence regards assignment uncertainty as meaningful as it reflects the blurry boundaries between ideal-typical subgroups making up the native and immigrant categories of interest.

The ISCA procedure extends past empirical work employing cluster analysis for the study of immigration and immigrant reception phenomena. For instance, Garip (2016) used k-means clustering to identify distinct types of Mexican migrants and carried within-cluster analyses, but did so through a hard clustering procedure that may overstate cross-cluster differences. Bail (2008) used fuzzy clustering to identify new configurations of immigration attitudes across European countries, but nevertheless relied on the highest membership score to assign cases to groups. Additionally, it did not provide a way to reconcile within-cluster analyses with a fuzzy approach. ISCA builds on and extend these approaches with an iterative stochastic assignment procedure that allows for modelling within each cluster while retaining fuzziness and uncertainty around cross-cluster boundaries. More generally, ISCA and other related approaches showcase the potential of unsupervised machine learning meth-

⁴ We thank one AJS reviewer for pointing that problem out in an earlier version of this manuscript.

ods (Molina and Garip 2019) to detect latent groups and achieve an epistemological break (Bourdieu and Wacquant 1992) in order to study group-level processes without reliance on homogenizing, "groupist" (Brubaker 2004) categories of analysis (ethnic, religious, etc).

4.2.1 ISCA step 1: Identifying heterogeneity in the mainstream through fuzzy clustering

In the first step, we identify and choose variables that are known to be associated with religiosity from past research⁵:

- Gender (Miller and Hoffman 1995)
- Age (Argue, Johnson and White 1999)
- Education (Albrecht and Heaton 1995)
- Family income (Immerzeel and van Tubergen 2013)
- Urbanicity (living in a city that is 100k+; Finke and Stark 1988)
- Professional status (working a job or not; Chadwick and Garrett 1995, Immerzeel and van Tubergen 2013)

Thus, we do not divide up a native sample directly in terms of religiosity, but demographic variables that are known to be related to it. We do so because finding variation on variables not included in the identification of a typology is typically used as a substantive validity check in clustering- and latent class analysis-based studies (Drouhot and Garip forthcoming, Garip 2016). More importantly, these variables also capture broader variation in structural positions and life conditions - the "panoply of circumstances that define the quality and character of our social lives" (Weeden and Grusky 2005: 143). Through clus-

 $^{^{5}}$ We transform continuous variables in dummies (coded as 0 for values below the median and 1 for values above) to avoid an arbitrary weighting of attributes due to different scales, which would affect the clustering results in undesirable ways.

ter analysis on these variables, we aim to capture the consolidated parameters of the social structure – that is, the patterned but non-intuitive interrelations of various forms of social differentiation (Blau 1974) - making up the "mainstream". Uncovering such social structure through regression modeling alone is theoretically possible with multiple interaction terms, but this approach would quickly run into untenable issue of data sparsity and is not desirable or practical when consolidation patterns are not known *a priori*. Relatedly,

To obtain subgroups in our sample of French natives, we employ the fuzzy c-means clustering algorithm (Bezdek et al. 1984), which minimizes the objective function:

$$\sum_{i} \sum_{j} w_{i} u_{ij}^{m} d_{ij} \tag{1}$$

where d is the Manhattan distance (dissimilarity) between observation i and center of cluster j, u_{ij} is the membership of observation i in cluster j, and w_i is the degree of membership of observation i. w_i is the critical feature of fuzzy clustering since it makes cluster membership a continuous rather than a binary variable as found in hard clustering. The degree of membership of observation i in cluster j is given by:

$$w_{ij} = \frac{1}{\sum_{k=1}^{c} \left(\frac{\|x_i - c_j\|}{\|x_i - c_k\|}\right)^{\frac{2}{m-1}}}.$$
(2)

where m is the so-called fuzzifier - a value larger than one determining the extent of overlap between clusters⁶. Each individual observations receives k membership scores where k is the number of clusters. Membership scores range from 0 to 1, and the sum of each individual's

⁶ A value of 1 effectively makes fuzzy c-means equivalent to hard k-means. We find that values lower than 1.3 tend to excessively decrease standard errors in subsequent regression analyses and vice versa, result in excessive noise at higher values, although heterogeneity patterns remain analogous. Hence, we set the fuzzifier m at 1.5, which is typical of the range of values in the literature (Huang et al. 2012, Schwämmle and Jensen 2010).

membership scores adds up to 1. If all individuals have a very high probability of belonging to only one cluster, then fuzzy and hard clustering do no differ much. However, if membership probabilities are balanced across clusters, hard clustering may results in arbitrary group assignments. This cannot be known *a priori* and further motivates our reliance on fuzzy rather than hard clustering.

4.2.2 ISCA step 2: Stochastic assignment to a subgroup

Once each individual from the native group has received k membership scores, cluster assignment A for respondent i is given by:

$$A_i \sim Multinomial(\mathbf{p}_i) \tag{3}$$

where $\mathbf{p}_i : \{p_{i1}, p_{i2}, ..., p_{ik}\}$ and $A_i \in \{1, 2, ..., k\}$

with vector \mathbf{p}_i being respondent *i*'s probabilities of belonging to each cluster, obtained in step 1. The random draw from the multinomial distribution \mathbf{p} is what makes cluster assignment truly probabilistic⁷. Non-native respondents' membership scores are calculated based on equation 2 weighting membership based on distance from centers in natives' clusters, and stochastically assigned to a cluster of reference based on \mathbf{p}_i .

ISCA assesses uncertainty arising from stochastic clustering assignment via Monte Carlo simulation. In particular, we repeat the process described above d = 500 times⁸, producing varying cluster assignments at the individual level – according to the underlying probabilities \mathbf{p} – and thus changing the within and between group compositions on which ulterior analyses are based at each iteration. The diagram below summarizes the iterative and probabilistic

 $^{^7}$ Conversely, a model assignment simply taking the highest membership value from ${\bf p}$ would remain deterministic and analogous to hard clustering

⁸ We find this to be a good tradeoff between reliability an stability on one hand, and computational power and processing time on the other hand. Results with d set at 1000 yielded substantively identical results.

approach of step 1 and 2 of the ISCA procedure.

Figure 4 about here - see page 74

At step 1, constitutive subgroups in the native population are identified, and individuals in the data are assigned membership scores adding up to 1 (referred to as \mathbf{p} above and coming from a multinomial distribution). At step 2, several random draws from resulting in different cluster compositions across draws - as seen in the grey and black cases being in together in group 1 at draw 1, and in separate groups at draw 2. This is because the grey case has a more balanced set of membership scores, making him or her more unstable in subgroup assignment across iterations. The procedure is repeated for immigrants by calculating membership scores and drawing d random assignments.

4.2.3 ISCA step 3: within-cluster modelling of assimilation outcomes and crossgroup comparisons

Step 3 consists of within-cluster modeling of assimilation outcomes of interest, with all models estimated across d iterations and k clusters, yielding dk + 1 set of estimates including one general model pooling all observation across clusters. Quantities of interest for cross-group comparison are the "net" difference in the outcomes of interest expressed by dummies for immigrant-religion groups and the interaction terms by immigrant-religion groups. Within-group heterogeneity is expressed by cross-cluster differences in terms of statistical significance for the variables of interest. In its emphasis on subgroup-level processes, ISCA preserves a focus on social structure, which would typically get lost in an approach relying on matching on the individual level, such as propensity score matching. Through d iterations of steps 2 and 3, ISCA produces an empirical distribution of estimates from which we report average values for the parameters and 95% confidence intervals from the Monte-Carlo standard errors.

5 Data & Measurements

5.1 Data

We use data from the complete module of the *Trajectoires et Origines* survey (Teo), a high quality, representative survey of immigrant populations with a large native, reference sample aged between 18 and 60 in France, and carried out by the French census bureau in cooperation with the National Demographic Institute (INED). Its comprehensive sets of covariates allows for a simultaneous testing of the hypotheses proposed above. The TeO survey was designed to fill a historical gap in France, where the gathering and use of ethnic and religious statistics has been illegal in the past (Simon 2008). The data gathering process occurred in 2008-2009, and the data was released in 2011 (Beauchemin, Hamel, Simon 2016). The response rate for the survey was 58%, yielding a sample of 21,137 respondents. The sample features 5,706 immigrant-origin respondents identifying as Muslims (58% foreign born, 42% second generation⁹), 4,496 respondents immigrant-origin identifying respondents identifying as Catholic (49% foreign born, 51% second generation), 4,549 immigrant-origin respondents declaring no religion (35%) foreign born, 65% second generation), as well as smaller groups of individuals identifying as Protestants or simply "Christian¹⁰. The sample also features 4,179 coded as "natives", i.e. born in France of French-born parents, out of which approximately 59% declare having a religion.

 $^{^{9}}$ 99.6% of Muslim respondents in TeO are either 1st or 2nd generation immigrants

¹⁰ While all analyses include the latter two groups, we do not present or discuss results for non-religious and "Christian" groups here so as not to overburden the paper. Furthermore, the results of statistical models of religiosity for irreligious groups are not very meaningful, while the "Christian" group is too small to carry within-cluster analyses as we do below. Our analyses focus on the Muslim populations, which we compare with Catholic immigrants.

5.2 Dependent variables of interest: TeO items on religiosity and religious practice

The key dimension of assimilation this study focuses on is religion. The TeO survey features four items measuring different aspects of religiosity and religious practice: the subjective importance of religion in the respondent's life (not, somewhat, quite or very important), the frequency at which the respondent follows his or her religion's dietary constraints and guidelines (never because there is none, never, sometimes, and always), the frequency of religious service attendance (never, only for important family events or holidays, once or twice a month, or at least once a week) and whether or not the respondent wears a visible religious sign (never, sometimes, or always). We coded those responses following an incremental 3-point scheme on a 0-2 scale to avoid inconsisteny across items in the original survey, with 0 capturing "not" and "never" responses, 1 capturing intermediate responses, and 2 capturing the "always" and "very important" responses. Our analyses below use both isolated items and an additive 8-point scale.

Individuals who do not report a religion were given a zero score for all dimensions. Additionally, to include individuals who gave up their parents' religion and to avoid attrition bias due to secularization across generations, we coded individuals who do not declare a religion but who report their parents as having a religion as "0" from that particular religion. For instance, an individual who declares no religion but who reports one or both parents being Muslim will be coded as Muslim with a score of 0 across all dimensions¹¹.

5.2.1 Predictors of interest

H1: Material insecurity: We measure material insecurity with two independent variables: family income standardized by the number of consumption units (1 for the the

¹¹ In case of religiously mixed parents, we coded these individuals by the father's religion.

first adult, 0.5 for each additional adult and 0.3 for each other person younger than 14) and the subjective evaluation of standard of living by the respondent's him or herself, binarized into a "comfortable" and "difficult" category.

H2: Reactive religiosity: We measure the perception of discrimination through a question on the opinion about the frequency of discrimination in France yielding a variable on the perception of discrimination (low or high). Second, we use a variable capturing the self-report of discrimination on the basis of nationality or "origins" present in the discrimination module of the TeO survey. We find this general formulation to strike a good balance for the self-report of discrimination related to the migration experience (as opposed to discrimination related to the respondent's gender of disability status) while not being overtly focused on the respondent's religion, which could lead to primarily measure the experience of discrimination among those who are "visibly" Muslims (e.g. those Muslim who wear a religious sign)¹².

H3: Parental religious socialization: To measure the influence of parental socialization on current religious identity and practices, we use the respondent's answer to a question about the importance of religion in the education received from parents ("not at all" "somewhat" "quite" or "very" important), which we turn into a binary variable (low and high religious socialization).

H4: Transnational ties: To measure transnational ties, we use a dummy variable measuring whether or not the respondent maintains friendship or family ties in the country of origin. To have a comparative measures for the native population, we consider ties to *outremer* territories (the "DOM-TOM") as constituting transnational ties since they resemble migrants' typical long-distance ties.

H5: Replenished religiosity: We measure opportunities for interaction with recently 1^{2} We thank an AJS reviewer for pointing this out and suggesting a more general measurement for the reactive religiosity hypothesis.

arrived migrants from Muslim countries with two dummy variables on neighborhood context. These dummy variables indicate if the respondent lives in a neighborhood located in the top decile at the national level for percentage of 1st generation migrants from North Africa (corresponding to 40% or more) and Sub-Saharan Africa (19% or more) living in the respondent's neighborhood. The neighborhood composition comes from census data included in the TeO survey. French neighborhoods as defined by the French census are much smaller than American census tracts, comprising around 2,000 people on average and constitute good proxies for neighborhoods. As for using immigrants as a measure of Muslim religious presence, North Africa has historically been almost entirely Muslim, and Sub-Saharan African immigration in France comes mostly from the Sahel region, comprising countries such as Senegal and Mali which feature large Muslim majorities among their populations (Lagrange 2013).

Other controls: In addition to the hypothesized predictors of interest, we control for age, squared age, gender, educational attainment (measured as one of eight categories in the French education system, such as *baccalauréat général* - general track in high school - or *licence* - bachelor's degree).

Table 1 presents descriptive statistics for the analytical sample of Muslim respondents. Table D2 in Appendix D features a similar table for all respondents across nativity and religion.

Table 1 about here - see page 66

6 Results

6.1 Identification of social structure in sample of French natives

Table 2 below reports results from a 4-cluster solution from fuzzy clustering found to best fit the sample of French native respondents. We select the 4-cluster solution after a series of 6 diagnostic tests (reported in detail in Appendix B) suggesting it to be substantially better than a 3-cluster one and as well-delineated as the less parsimonious 5- and 6-cluster ones. Importantly, the clusters are meaningful (Grimmer and King 2010) – forming easily identifiable segments of the French population - and highly differentiated as indicated by small Monte Carlo errors¹³.

Table 2 about here - see page 67

Native French are segmented into subgroups that are readily identifiable in terms of social class. This is an inductive discovery: while they could have theoretically done so, gender and age do not meaningfully structure heterogeneity within the data, which showcases the reflexivity vis-à-vis social categories afforded by unsupervised machine learning. Cluster 1 features older individuals who have low earnings and have low educational attainment, but are nevertheless employed - forming a clear "working class" cluster. Cluster 2 is made up of working individuals, with a low education and intermediate income level. The occupational structure of this group - which we label "peripheral petite bourgeoisie" to acknowledge its location outside large cities - encompasses low ranking employees and civil servants who are

¹³ Monte Carlo error refers to the standard deviation in mean values in each variable and cluster, across d iterations. It is the variation that comes from change in cluster composition across d random draws from \mathbf{p} . As such, it does not capture variation within clusters but variation across iterations (Step 2). See Appendix C for more details on overlap and uncertainty across iterations of assignment based on random draw from the multinomial distribution \mathbf{p} .

more senior that those of cluster 1, as well as retirees. Cluster 3 concentrates socially advantaged individuals with higher human and economic capital residing in cities - the middle class and beyond, which we label "urban middle class +". Finally, Cluster 4 encompasses younger, poorer natives who are not integrated on labor markets. A closer look at its occupational structure reveals that it features the homemakers and the unemployed respondents of the sample¹⁴. We label this group "socially dependent".

Does the internal social differentiation of the native French population translate into diverse religiosity levels? Figure 5 below reports the mean religiosity score for the 4 subgroups making up the native population.

Figure 5 about here - see page 76

Despite an overall consensus in the population towards low religiosity, the working class subgroup is noticeably higher. Pairwise t-tests (not shown) shows that the working class significantly differs in religiosity from all other groups, and that both cluster 2 (peripheral petite bourgeoisie) and 3 (urban middle class+) also differ significantly from cluster 4 (socially dependent). Such variation is consequential to measure the extent of the religiosity differential between French natives and Muslims of immigrant origins. If many more Muslim individuals are in the "Socially dependent" group for instance, this might make them more culturally heterodox in terms of religiosity than those in the "Working class" subgroup. The magnitude of the religiosity differential depends on the subgroup of reference constituting the baseline religiosity level assimilation is measured against.

 $^{^{14}}$ Tables showing the occupational structure of the obtained clusters are not shown here but are available upon request.

6.2 Assignment results and sociodemographic heterogeneity among 1st and 2nd generation Muslims

Figure 6 about here - see page 76

Figure 6 presents the results of matching Muslims respondents in the TeO survey to their socially most proximate subgroup within the native population following the same probabilistic procedure of stochastic assignment across iterations. Muslims in France are socially much more diverse than depicted in the literature. The "socially dependent" category comprises the largest group, and much ethnographic effort has been expanded to describe the lives of foreign born (e.g. Lagrange 2013) and second generation (e.g. Marlière 2008) falling in that category. By comparison, far less is known on the working class and peripheral petite bourgeoisie subgroups, while an emergent literature studies the social experience of the rising immigrant elite belonging in the middle class and beyond subgroup (e.g. Drouhot 2020a, Waldring 2018). Such sociodemographic heterogeneity, and its implications for research on Muslims in general, has rarely been acknowledged or studied.

6.3 Structure of the Muslim-native religiosity differential

Figure 7 about here - see page 77

Figure 7 plots the net differential in religiosity from natives for second-generation Muslim respondents across subgroups. The cumulative religiosity score is an additive, score composed of the four dimensions - subjective religiosity, religious attendance, following of religiously imposed dietary constraints, and wearing of a religious sign, all on a 3-point scale (0-2) as described in section 5.2 above.

Figure 8 yields two substantive results. First, the aggregate differential is mainly accounted for by differentials on two dimensions of religiosity - subjective religiosity on one hand, and the following of dietary constraints on the other. Conversely, and contrary to the impression one might derive from longstanding societal debates regarding the construction of mosques and legislation on the veil (Bowen 2007), French-born Muslims are not strongly differentiated from native French by their higher propensity to wear visible religious signs or attend religious service. Second, the second generation's degree of difference from their native counterparts is heterogeneous across subgroups, which directly relates to the different baseline religiosity levels among the native French population documented in Figure 6. Respondents from the "socially dependent" subgroups are consistently farther away from native religiosity levels than Muslims in other groups. Likewise, respondents in the urban middle class and beyond experience higher levels of departure from native levels of religiosity. In other words, the religiosity differential is polarized between Muslim subgroups at the opposite end of the social spectrum. This finding complements existing ethnographic work on the lives of socially disadvantaged second generation Muslims (Lepoutre 1997, Kepel 2012a, Marlière 2008), as well as emerging qualitative work on the subjective experience of cultural difference among the the new Muslim middle class, and the challenges associated with reconciling class and religious identities (Drouhot 2020a, Waldring 2018). A similar graph for foreign-born (first generation) Muslims shows very similar results¹⁵, albeit with less heterogeneity across clusters.

To sum up, results from fuzzy clustering and probabilistic assignment (ISCA step 1 and 2) show that there exists four native subgroups at the intersection of major sociode-

¹⁵ These results are not shown here due to space constraints but are available upon request.

mographic variables that are known to shape religiosity and broader structural patterns of variation within French society. Accordingly, and despite an overall cultural consensus in the population around low religiosity, these subgroups nevertheless differ in religiosity - the key outcome of interest in this study. Probabilistic assignment of Muslim respondents to a socially proximate subgroup shows considerable sociodemographic heterogeneity across immigrant generations, which in turn is associated with different magnitude in the religiosity differential - with second-generation Muslims in the urban middle class and socially dependents subgroups being especially more religious than natives across all religiosity dimensions. In spite of this variation, the second generation as a whole tends to be more religious than French natives in terms of subjective religiosity and following religiously imposed dietary constraints, but much less so in terms of religious attendance and the wearing of conspicuous religious signs. In the next section, we test our five hypotheses and focus on separately modelling subjective religiosity and the following of dietary constraints as the two main sources of the aggregate differential in religiosity.

6.4 Sources of the religiosity differential: Results from within-cluster regression models

In the models that follow, we test our five hypotheses by modelling religiosity by subgroup (i.e. cluster), as well as presenting results for a similar model for all respondents pooled together. This allows us to compare results from ISCA with results from the traditional nominal group approach.

Each model includes natives and second-generation immigrants who are either Muslim, Catholic, simply "Christian" or non-religious. We also present and discuss supplementary results from models including foreign born respondents. The key quantities of interest to our research question are the coefficients for the dummy variables by immigrant-religion group taking natives as the baseline and capturing variation in religiosity not accounted for by other statistical controls, the main terms corresponding to our predictors of interest, as well as their interactions terms to examine how their statistical effect vary by immigrant-religion group. While we talk of processes, explanations and effects to designate statistical effects, we do not mean causal effects or processes. While some of the mechanisms hypothesized to be at work are causal in nature, none of the statistical relationships we describe to test our hypotheses are causal, even though we present and interpret our finding with a language that may, at times, imply causality. This constitutes a key limitations of our research design which we discuss in more detail below.

Upon examining these coefficients, we compare them *between* as well as *within* groups that is, across subgroups within each nominal religious group. We present results for Catholic immigrants for the sake of comparison and also because their size is roughly equivalent with Muslims in the sample, whilst Protestant and other Christian groups are much smaller. To facilitate comparison between and within religious immigrant groups, we present all regression results as visualizations (Kastellec and Leoni 2007).

6.4.1 Modeling subjective religiosity

Figure 8 presents selected¹⁶ regression coefficients for ordinary least square models of subjective religiosity, by subgroup and a general, pooled model with all respondents together (top, in red).

Figure 8 about here - see page 78

We first discuss the significance of the "net surplus" term for Muslims, and then discuss

¹⁶ Coefficients for demographic controls and certain groups such as "Christian" and non-religious immigrants are not shown. The full graphs are available upon request.

each interaction terms for Muslim respondents and compare these to the main terms and the interactions terms for Catholics. The "net surplus" designates the quantity of subjective religiosity among Muslims that is not accounted for by other variables included in the model. Crucially, the top red coefficient indicates that a pooled model across all respondents shows no religiosity differential net of all controls including in the model since the error bar overlaps with zero. Comparing this pooled coefficients with coefficients from within-cluster analyses however, we see that the pooled coefficient hides a net, positive differential among two subgroups - namely the socially dependent and the urban middle class+. Meanwhile, the coefficients for the working class and peripheral petite bourgeoisie overlaps with zero, indicating that there exists no significant difference between Muslim and natives once variables relating to our hypotheses and other controls are introduced. This is a substantively important result. A nominal group approach would yield an average results showing all second-generation Muslims to have no religiosity differential net of controls. Instead, withingroup estimates obtained from ISCA show that unexplained cultural difference exists, but only for two Muslim subgroups for whom the differential is quite high given that the scale runs from zero to two. Comparing these coefficients to the Catholic second-generation, we see that our model performs better among Muslims than Catholics, as the latter has a higher and more consistent religiosity differential net of controls.

Switching to the main as well as the interaction terms, we find support for H1 through the negative association of income and religiosity among Muslims, but this association holds only among the socially dependent and the urban middle class +. It appears only among Muslims, as it is neither present in the main terms or among Catholics. Somewhat curiously, the association between subjective hardship and religiosity is in the opposite direction to what we hypothesized. H2 also find supports with an association between both perception and report of discrimination and subjective religiosity among Muslims. These statistical effects are heterogeneous across subgroups however: a high level of perception of discrimination has the expected effect in all groups except the peripheral petite bourgeoisie, and the association between report of discrimination and religiosity observed in the pooled sample is entirely carried by the urban middle class subgroup. We also find support for both H3 on parental socialization and H4 on transnational ties, but these variables are at work among all groups and not just Muslims as indicated by the large effects in the main terms. The association documented in earlier work (e.g. Soehl 2016) regarding the strength of Muslim parental socialization on religiosity appears only among the urban middle class. Finally, the graph also suggests a rather uniform process of replenished religiosity through contact with foreign-born from North Africa, and to a lesser extent Sub-Saharan Africa but the statistical relationship between the presence of African immigrants and subjective religiosity only occurs among the socially dependent.

Summing up, Muslims differ from natives in terms of subjective religiosity, but this is true only of those in the "socially dependent" and urban middle class subgroups. Overall, we find some degree of support - depending on the share of significant and non-significant effects across Muslim subgroups - for our five hypotheses. While reported discrimination has a very strong association with religiosity among some subgroups of Catholic immigrants as well, both perception of discrimination and income have the expected relationship with religiosity among Muslims only. Transnational ties and parental socialization are at play among all religious groups.

6.4.2 Modeling the following of religiously imposed dietary constraints

Figure 9 shows results from a similar modeling approach for the other dimension of religiosity on which second-generation Muslims stand out compared to native French - namely the following of dietary constraints imposed by their religion.

Figure 9 about here - see page 79

Figure 9 reveals a large, consistent differential with natives net of all controls. Muslims' differential is also higher than Catholics. In parts, this likely has to do with the more explicitly dietary rules imposed by Islam on aspects such as alcohol consumption and eating *halal* (licit) foods compared to Catholicism and other Christian religion, although fasting is widespread in several branches of Christianity as well. Consistent with the results from models of subjective religiosity, the urban middle class and socially dependent Muslim subgroups have higher levels of cultural heterodoxy as expressed by higher differentials net of controls, compared to the working class and peripheral petite bourgeoisie, when it comes to following religious dietary constraints.

Nevertheless, we find some support for all five hypotheses as seen in the consistently positive statistical effects of the interaction for Muslims compared to the main terms and the interaction terms for Catholics. We find a negative relationship of income, as perception and report of discrimination with the following of dietary constraints. General perception of discrimination is positively related to following religious dietary constraints among the second generation, but the effect is carried by the working class. Likewise, the effect one would find in a pooled sample for report of interpersonal discrimination is driven by the social experience of the peripheral petite bourgeoisie and the urban middle class subgroups. Parental socialization and transnational ties have a strong relationship with the following of dietary constraints among all respondents, and an even stronger one among all Muslim subgroups except the working class (for parental socialization) and the peripheral petite bourgeoisie (for transnational ties). Finally, we find the same positive relationship between that form of religiosity and the high presence of Maghribi and Sub-Saharan African immigrants in the neighborhood as we did in the case of subjective religiosity.

6.4.3 Predictive profiles & decomposition of the religiosity differential among the 2nd generation

In order to measure the magnitude and predictive power of the independent variables and parse out their relative influence in shaping delayed religious assimilation among the second generation, we computed predicted religiosity values for two profiles based on the regression models presented earlier, across subgroups and our two religiosity dimensions of interest. In one profile, we set independent variables at values that are associated with higher religiosity - i.e. lower income (25th percentile within the respondent's subgroup), high perception or report of discrimination, high emphasis on religion in parental socialization, holding transnational ties, and living in a neighborhood with a high presence of immigrants from North Africa. In the second profile, we set those variables at lower predictive values i.e. at 0 for binary variables and at the 75th percentile for income. All other variables are held at their means. Figure 10 and 11 depict the gap between the two predictive profiles, with the red line being the mean predicted religiosity values for natives.

Figure 10 about here - see page 80

Figure 11 about here - see page 81

For both subjective religiosity and following dietary constraints, the "low" predicted values are statistically similar or even lower than native values, although a positive gap remains between natives and "low" predicted values for Muslims among the urban middle class and socially dependent for the following of dietary constraints. Nevertheless, the collapse in predicted religiosity values in the "low" profile suggest our parsimonious set of predictors has strong explanatory power for the observed religiosity differential among the Muslim second generation. To gain further insight, it is useful to disaggregate the gap between the "high" and "low" profiles in the % change related to the statistical effect to each variable, across subgroups and religiosity dimensions. Table 3 provides a breakdown of the relative % change between the "high" and "low" predictive profiles following change in each predictor.

Table 3 about here

For subjective religiosity among the second generation, variables capturing religiosity as a "cultural import" from the context of origin, namely parental socialization and the maintenance of transnational ties, account for a majority of the difference between predictive profiles. Nevertheless, variables related to discrimination and replenishment account for large portion of the variation - typically around forty percent. This tendency is stronger in the case of dietary constraints, for which material insecurity, discrimination and replenishment variables account for more than half of the change between predictive profiles. The weight of discrimination variables is particularly noteworthy, as they account for a fifth to a third of the gap in predictive profiles across clusters and religiosity dimensions.

A similar disaggregation exercise between predictive profiles based on models including both 1st and 2nd generation Muslims shows notable differences, as parental socialization and transnational ties dominate in percentage change across subgroups and religiosity dimensions (see table D1 and Figure D1 and D2 for the full models in Appendix D¹⁷). This comparison illustrates the larger weight of discrimination and replenishment variables for the second generation compared to the first generation, who largely imports high religiosity from the

¹⁷ We do not discuss these models including foreign born Muslims further due to space constraints, but they show analogous results in general, the difference we mention here notwithstanding.
context of origin.

Overall, the high religiosity of the second generation appears as a relatively balanced mix of cultural import (family socialization, transnational ties) and response to inequality and social closure (poverty, discrimination, and replenishment) in France. As such, the puzzle of delayed religiosity is both exogenous and endogenous to the context of destination for second-generation Muslims in France: it is cultural imported and transmitted from contexts of higher religiosity in the origin countries and reproduced as a form of blocked acculturation (Wimmer and Soehl 2014) in response to social closure and inequality in the context of reception.

6.5 Supplementary analyses

We recovered substantively similar subgroups in the native population of reference in ISCA step 1 with alternative data partitioning methods, namely *k*-means clustering as well as latent class analysis, which bolsters our confidence in the internal validity of our results obtained with fuzzy clustering¹⁸.

Another series of robustness checks attempted to gauge the effect of selection in our estimation of the effect of discrimination variables. More religious Muslims might be, for various reasons, more likely to be discriminated against in the first place and this could confound the effect of discrimination. We thus ran separate models for individuals who "never" wore a religious sign to see if the effects of discrimination variables were driven by those who "always" or "sometimes" wear a religious sign¹⁹. Interaction terms for discrimination variables

¹⁸ Note that k-means does not allow for the probabilistic assignment procedure we designed here because it is a "hard" clustering method in which belonging to clusters is a binary variable - hence our not relying on it here other than a robustness check. Latent class analysis is closer in spirit to ISCA but more computationally intensive and less parsimonious as it is model- and not algorithm-based. Given the multistep approach in ISCA, we opted for the simpler method at step 1. All these alternative results through other methods are available upon request.

¹⁹We also attempted to obtain estimates for the "net" effect of discrimination using propensity score matching but unfortunately the common support region to carry out the analyses was too small between the

among Muslims in models restricted to those who "never" wear a religious sign remain significant and comparable to earlier models. Certain coefficients actually become statistically insignificant among those who never wear a religious sign. Overall, this indicates that the statistical relationships between perception and report of discrimination documented earlier are not driven by a subset of individuals who are more likely to perceive and report discrimination because they wear a visible religious sign. These models are available in Appendix D (Figure D3 and D4).

6.5.1 Concerns for external validity and generalizability: temporal and geographic scope of the religiosity differential in France and beyond

There exists additional concerns for the external validity of our substantive results. First, the TeO item on religiously imposed dietary constraints may pick up specificity of Islamic dietary practices rather than religiosity per se, as Islam is one of the more constraining world religions in that regard. TeO is also a somewhat dated survey as its fieldwork occurred in 2008 and 2009. Finally, it is possible that the religiosity surplus is a uniquely French social fact, given the specific history of religious wars and aggressive secularism that followed in the 20th century. To contextualize our documenting and analyses of the religiosity differential based on the French TeO survey, we use data from multiple round of the European Social Survey containing differently worded questions on religiosity. Specifically, we focus on a religiosity dimension not present in TeO and arguably present among all both Christian and Islamic religions, namely praying. By focusing on the differential in praying behavior between natives and Muslim immigrants in France and other European countries, in periods leading up to and following the 2008-2009 period when TeO was fielded, we can gain further appreciation of the external validity and generalizability of the findings from the current study.

treated and untreated groups.

Figure 13 plots proportions stating they pray daily among 1st and 2nd generation Muslims and French natives (of any religion), from ESS rounds carried every two years between 2006 and 2018.

Figure 13 about here - see page 83

A sizeable gap between natives and Muslims is consistent across survey years, with a majority of self-identified first- and second-generation Muslims stating they pray daily and only a minority of natives stating the same. The native-immigrant religiosity ratio is comparable to what we documented earlier based on TeO, with Muslim immigrants' religiosity being several times higher in magnitude than natives. If anything, the religiosity differential increases over time. We thus gain further confidence than our results regarding the magnitude of the religiosity gap are not an artefact of specific survey questions or survey periods. To further contextualize our findings, Figure 14 presents similar descriptive analyses in different European countries that also have sizeable Muslim minorities.

Figure 14 about here - see page ??

Similarly to France, a substantial immigrant-native gap in praying behavior exists across countries and survey years, albeit with variation in both dimensions. The proportions of Muslims stating they pray daily are comparable to France, in spite of different national contexts and migration histories. While the specifics of our ISCA analyses cannot be replicated for reasons of space and data, we nevertheless gain confidence that the religiosity differential is a general feature of contemporary migration societies in Western Europe, and not just imputable to specifics of the TeO survey or the French context.

7 Discussion

7.1 Taking heterogeneity seriously: uncovering subgroups and parallel social processes

Theoretical work on immigration and incorporation has repeatedly emphasized the analytical importance of the internal diversity inherent to both native and immigrant groups (Alba and Nee 2003, Portes and Zhou 1993, Vertovec 2007). These concerns are also prominent in the work of Bourdieu-influenced scholars warning against "groupist" thinking and emphasizing the need for a reflexive use of social categories like ethnicity and religion in order to avoid accounts of bounded, homogenous and solidary groups (Brubaker 2004, 2013, Wimmer 2013). These theoretical emphases on heterogeneity and reflexivity are the analytical counterpart to more political concerns about essentialist representations of the "other" in postcolonial theorizing (Said 1979) and the emerging scholarship on contemporary Islamophobia (Taras 2013). While qualitative inquiries on Islam in Europe have been attentive to these questions and careful not to assume Muslims form a bounded and homogeneous group (Bowen 2007, 2012, Kapko 2007, Kepel 2012, Beaman 2015a), quantitative scholars have methodologically assumed Muslims and Islam as relatively fixed entities through the production of statistical findings relying on single group-level estimates (See Voas and Fleischmann 2012, Drouhot and Nee 2019 for reviews; for a critique of "methodological Islamism" specifically, see Brubaker 2013).

The Inductive Subgroup Comparison Approach we introduced and implemented is an attempt to translate these theoretical concerns for heterogeneity and reflexivity into methodological practice based on fuzzy logic. By relying on fuzzy clustering and Monte Carlo simulation, ISCA allows for the probabilistic study of intergroup difference and its determinants in terms of empirical subgroups making up nominal group categories, and thus operates an epistemological break to study immigrant groups without reliance on "groupist" categories of analysis (Brubaker 2004, 2013). As such, ISCA produces multiple estimates for each nominal group category under study, which allows for considerably more nuance when discussing assimilation trajectories in comparative perspectives. Net of controls, within-cluster regression models showed that a single, nominal group-level estimate of the religiosity differential would be misleading. In particular, results showed that urban middle class and socially dependent subgroups consistently carried the single-group level estimates upward, while the peripheral petite bourgeoisie and the working class were less different than natives in terms of religiosity - and sometimes not statistically different at all, as in the case of subjective religiosity. In other words, the single, average estimate hides considerable heterogeneity, and this matters because it would directly affect overall conclusion about the extent of Muslims' cultural difference in terms of religiosity. Given the politicization of Muslim populations as homogeneous and problematic cultural groups, we consider these results, as well as the methodological approach that led to them, to be timely and important. The code used in the analyses will be made available for re-use by the community of researchers, so that ISCA can be adapted to advance the study of assimilation and difference between heterogeneous groups in other empirical contexts.

In addition to providing a methodological response to theoretical concerns for essentialism, this strategy led to substantial analytical payoffs in its uncovering of different processes at work among different groups, as expressed by the varying statistical significance of coefficients across clusters. Thus, it is helpful to interpret and further contextualize these differences under the light of existing qualitative research. The socially dependent subgroup has been the subject of past ethnographic work focusing on the experience of marginalized second-generation Muslims - economically vulnerable individuals living in segregated neighborhoods, and well aware of the religious and spatial stigma affecting them (Lepoutre 1997, Franz 2007, Kepel 2012a, Lagrange 2013, Lapeyronnie 2008). Ethnographic work indicates that religiosity among these socially disadvantaged Muslims may act as a compensation for finding community and self-esteem in spite of perceived social exclusion (Kapko 2007, Khosrokhavar 1997). In particular, the combined effect sizes for income and replenishment variables are highest among that cluster for both subjective religiosity and following dietary constraints²⁰, which dovetails with ethnographic descriptions of the salience of religion in social norms and collective life in certain ethnically segregated neighborhoods in France known as the *banlieues* (Lepoutre 1997, Lapeyronnie 2008). In these neighborhoods, social disadvantage results in dense, local networks of co-religionnists enforcing religious norms and identities through reputation dynamics and social pressure in the local community (Kepel 2012a, Lapeyronnie 2008), so that high religiosity constitutes a way to belong locally.

At the opposite end of the social spectrum, recent research on the Muslim middle class in France can help us further understand the results for cluster 3. Through qualitative interviews with immigrant-origin professionals, Drouhot (2020a) identified a peculiar predicament among Muslim professionals, who reported high levels of religious stigma compared to their non-Muslim counterparts. These perceptions of being cultural outsiders due to their religion stemmed from the disconnect between their high levels of professional success, and related, but unmet expectations of fair treatment and high social status in their daily life. Likewise, Beaman (2015a) interview study of middle class second-generation Muslims showcased this group's conscious effort to reconcile their religiosity and religious practices with being seen as French. Both studies described the negotiation of cultural difference among Muslim respondents who experienced upward mobility and desired to maintain their religious identity while leading middle or upper middle class lives. These qualitative findings directly relate to the strong statistical relationships we find between urban middle class Muslim's religiosity and their perception and self report of discrimination, which is higher than among

 $^{^{20}}$ This is indicated by the effect sizes in Figures 9 and 10, not by the % change in the decomposition from Table 3, as the latter does not capture effect size but relative changes in the two predictive profiles.

other subgroups. For this subgroup, higher levels of education and socioeconomic attainment translate into more acute perceptions of discrimination. In addition, one notes the stronger role of parental socialization among middle class and peripheral petit bourgeois respondents for subjective religiosity. This extends Soehl's (2016) analyses based on similar data, which documented a strong interaction effect between socialization from Muslim parents and subjective religiosity. Our approach, however, suggest that Soehl's results are driven by Muslim respondents with higher socioeconomic attainment (cluster 2 and 3 in our approach). Again, past ethnographic work help makes sense of this finding, as it tends to describe parental religious socialization as less forceful than in more disadvantaged (e.g. cluster 4) portions of the Muslim population. This leads middle class, second-generation Muslims to embrace their parents' heritage on their own terms, and as a form of self-actualization (Beaman 2015a: 52-55).

It is harder to contextualize the results of the working class and peripheral petite bourgeoisie Muslims due to the lack of existing research. The former is characterized by a strong effect of perception (but not self-report) of discrimination and the presence of Maghribi immigrants in the neighborhood. The latter shares some of statistical relationships documented among the urban middle class cluster, such as self-report of discrimination and the salient role of parental religious socialization. While past qualitative work focused on both end of the class spectrum is helpful in interpreting our results, far less exists on these two subgroups in the intermediate social strata in French society. An added benefit of our analytical approach focused on heterogeneity is to point out to these sizeable but largely unknown group of "ordinary" Muslims, who are neither exceptional in their middle class status nor in their degree of social disadvantage, and who should be the object of future research focused on empirical subgroups existing below the nominal "Muslim" label.

7.2 The social fact of the religiosity surplus: exogenously imported and endogenously reproduced

Through decomposition of the change in predicted religiosity values, we showed that a parsimonious set of predictors - income, perception and report of discrimination, parental socialization, transnational ties and religious replenishement through high presence of immigrants from Muslim-majority countries in the neighborhood - accounted for a large portion of the observed religiosity differential between natives and second-generation Muslims in France compared. What do these findings suggest for assimilation theory and what do they contribute to immigration research in general?

Interpreting these substantive results requires historicizing the Muslim presence in France, and Europe in general. Today's Muslim minorities are yesterday's guest workers and their children. Those workers came to Europe in the late 1950s and 1960s in search of better salaries in the postwar economic boom, without intending, or being provided with institutional pathways to stay permanently (Laurence 2012). The 1973 Oil Crisis resulted in an economic recession and rising unemployment, leading Western Europe and governments to freeze all guest worker programs. Workers who were already in Europe wanted to preserve their professional future and thus started to bring their family members while hoping that guest worker programs would resume (Moch 2003: 187-188). In the late 1970s, the French government encouraged return migration by offering cash incentives - the "million Stoléru" equivalent to around €1500 - and discouraged new migration by increasing penalties on undocumented migrants. Those policy initiatives were largely unsuccessful, however, and by 1981 around 1.5 million migrants from Algeria, Morocco, Tunisia and Turkey were present in France.

The unanticipated shock at the origin of the sudden halt of worker programs - the 1973 Oil Crisis - and the following ambiguities regarding the future and status of ex-guest workers and their families produced a specific mode of entry of migrants from Muslim societies in France, one that was not fully voluntary like earlier migration waves from nearby European countries (Moch 2003). Guest workers and their families who, by and large, did not plan on permanently migrating found themselves as involuntary minorities (Ogbu and Simons 1998) in a culturally threatening context, i.e. one characterized by secularism and Catholicism. They thus had an incentive to maintain and transmit their religion to their children as well as links to the country of origin. Meanwhile, their unexpected presence generated widespread cultural anxiety once the economic boom came to a halt in the mid-1970s. The politicization of immigration and immigrant integration then rose in the 1980s as it became clear that those guest workers were in fact becoming permanent minorities (Castles 1986, Noiriel 1996, Moch 2003, Laurence 2012). Controversies regarding the accommodation of Muslim practices and religiosity emerged a decade later, such as the first "veil affair" in 1989.

In light of such a quasi-accidental mode of entry in French society, we can think of a high religiosity differential among Muslim immigrants and their children in France as resulting from a negative cultural equilibrium. Immigrants from Muslim countries imported high religiosity levels that they successfully transmitted to their children, while maintaining ties with the country of origin and its religious culture. Additionally, guest worker families and their children were typically of modest social origins - experiencing poverty and segregation in immigrant-heavy neighborhoods around major urban centers (Catles 1986:764; Lévy-Vroelant 2006) - both of which may have further encouraged high religiosity across generations. In the French cultural context (Bowen 2007), this has made Muslim families suspicious and liable to stigma and discrimination - thus reinforcing initial cultural difference through reactive religiosity in a circular motion.

This narrative is consistent with recent experimental work on the "negative discriminatory equilibrium" affecting Muslims in France (Adida, Valfort and Laitin 2016). Using experimental methods, Adida, Valfort and Laitin show that there exists a specific type of discrimination against Muslims in France, above and beyond race, and that this discrimination feeds off native perceptions of Muslims' religious and gender norms (*ibid* chapter 6). Muslim individuals perceive and react to this discrimination by maintaining a high attachment to their culture of origin and a low level of identification with France. Together, these findings describe the religiosity differential between second-generation Muslims and French natives as an exogenous import from Muslim-majority countries transmitted by parents and social ties, on the one hand, and a reaction to social disadvantage, segregation and discrimination that is endogenous to the context of reception, on the other hand. In part, these results relate to Wimmer and Soehl's (2014) description of a "blocked acculturation" among the second generation experiencing social closure and inequality in European countries of destination and maintaining the cultural values of their parents as a result.

The religiosity differential between Muslims and natives is an important social fact, and helps make sense of many scholarly and political discussions singling out Muslim minorities in Europe. For instance, Muslim demands for accommodation of religious dietary needs in public schools (Bergeaud-Blackler 2014), low rates of religious mixed marriages (Carol 2016), and notoriously conservative attitudes among Muslim communities regarding gender equality and homosexuality (Diehl et al. 2009, Soehl 2017) can all be partly explained by Muslims' high levels of religiosity compared to natives. In turn, such tensions directly relate to the re-packaging of populist right wing political platforms around "civilizationism" and the protection of a purported Western European liberal culture against Islam (Brubaker 2017). While these platforms arise as a response to the perceived lack of integration of Muslim populations, it is somewhat ironic that a large portion of the religiosity differential among second-generation Muslims is associated with the experience of inequality and discrimination in the context of reception, since civilizationist platforms would likely worsen these dynamics and thus maintain cultural difference if translated into policy. It is up to further research - including research on the emerging third generation - to investigate how these dynamics of importation, reproduction and reaction to perceived cultural difference causally relate to one another and result in polarization or assimilation in the long run.

8 Limitations and conclusion

This paper has quantitatively described a phenomenon of delayed religious assimilation across generations among Muslims in France. Using the Inductive Subgroup Comparison Approach, a new empirical strategy for the study of cultural difference between heterogeneous social groups relying on fuzzy clustering and Monte Carlo simulation, we find that secondgeneration Muslims are more religious than socially comparable natives in terms of subjective religiosity and propensity to follow religiously imposed dietary constraints, but not in terms of religious attendance or the propensity to wear religious signs. We also document even higher level of cultural difference from socially proximate natives among two subgroups within the Muslim population, namely those who experience high degree of social disadvantage and those who are members of the urban middle class. Statistical modelling within clusters show that income, the perception and self-report of discrimination, parental religious socialization, transnational ties and living in neighborhoods with a high presence of North and Sub-Saharan African migrants are associated with higher religiosity, albeit with a differential effect across Muslim subgroups. In particular, decomposition via predicted values shows that a large portion of the observed differential among the second generation is associated with patterns of inequality and social closure which are endogenous to the French context of reception.

In closing, a few remarks about the limitations and potential prospects opened by our study are in order. Despite its large sample and unusually high number of covariates, our study remains strictly descriptive and based on cross-sectional data. This undoubtedly constitutes a strong limitation, as assimilation is an inherently dynamic and temporal process. Many mechanisms hypothesized to be at work here, such as reactive religiosity, religious replenishment and transnational ties, are hard to measure without confounders in observational data. It is possible that some of the relationships we document are in part confounded with self-selection and reverse causality, so that more religious Muslims maintain more transnational ties and are more prone to live in ethnically and religious segregated neighborhoods, for instance. These limitations notwithstanding, the holistic approach we took to studying the religiosity differential brought several separate strands of the existing literature in one coherent analytical framework, and the empirical links we established between cultural difference and patterns of cultural transmission, inequality and closure remain substantively important in spite of remaining ambiguities on causality. It is up to future work to document and describe these relationships with methods better suited for causal inference. Experimental and longitudinal data are needed to further study the processes at work among Muslims in France (see Adida, Valfort and Laitin 2016 for a recent experimental example on discrimination).

Finally, let us restate an important point: heterogeneity matters in the empirical reality of social categories. Scholars of migration and intergroup relations can and should be wary of taking evident social categories of the migration process, such as immigrants or Muslims, as natural categories of analysis. The "Muslim" label covers a diverse reality made up of distinct pathways of religious assimilation. Our empirical approach consisting in decomposing nominal Muslims and natives in empirical subgroups, as well as our documenting of heterogeneous statistical effects among them, suggests that a data-driven deconstruction of bounded groups to avoid their reification is not a fashionable intellectual posture but an analytical desideratun.

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Appendix A: Background on the Muslim presence in Western Europe

Contemporary Muslim immigration dates back to the migration flows of foreign male workers brought in to help rebuild Europe after World War Two. Stimulated by the Marshall Plan, European economies were in full swing during the 1950s and 1960s and relied on bilateral treaties to temporarily import a much needed extra-manpower from countries with which they had close ties inherited from colonialism or historical alliances. Britain thus relied on Pakistani and Indian workers, Germany on Turkish ones, and France on Moroccan, Tunisian and Algerian ones. Those male workers sought employment abroad because the better pay allowed them to send remittances to their home country; in turn, national governments were happy not to worry about their integration since it was a straightforward guest worker arrangement in which workers would voluntarily return to their home countries (Laurence 2012). Workers rotated freely between countries and their presence or culture did not generate widespread hostility in Europe at the time. It was in fact quite the opposite: upwardly mobile European workers happily gave away their manufacturing and construction jobs as they entered the middle class en masse (Noiriel 1996, Laurence 2012).

This political and social arrangement came to a brutal halt in 1974 when Western economies fell into recession as a result of the first oil shock. Unemployment sharply rose and European governments stopped all flows of foreign workers. Those who were in Europe at the time stayed, and migration flows virtually changed overnight, from male workers to the family members those workers had left behind. The Muslim presence in Western Europe has since then been deeply contentious and coincided with the rise of identity, immigration and immigrant integration as objects of political debates (Noiriel 1996. In Germany, these tensions took the form of important debates on the reform of nationality law and the public funding of Islamic religious institutions (Joppke and Torpey 2013) while debates revolved around mutilculturalism in Great Britain and the Netherlands. In France, policy and scholarly debates revolved around the integration of Muslim practices and claims in the existing church-state institutional framework of "laïcité" (secularism), promoting a strict relegation of religion to the private sphere (Bowen 2007). Several "veil affairs" and requests for dietary accommodation in public schools have, in particular, generated much controversy.

Muslims are now the largest and fastest growing religious minority in Europe, making up 3.5% of the national population on average in Western European countries (Laurence 2012, Pew Research Center 2015). Muslims in France, however, represent 7 to 8% of the national population, accounting for around 4.5 million people forming the largest Muslim minority relative to the national population in Europe (*ibid*).

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Appendix B: Cluster validation measures to determine the best number of clusters in the sample of French natives

Figure B1 about here - see page 89

This study uses certain validation measures to help choose the number of clusters used to break down the native French reference sample in several reference categories.

- The Xie-Beni index should be *minimized*.
- The Fuzzy Silhouette Index should be *maximized*.
- The Modified Partition coefficient index should be *maximized*.
- The Partition Coefficient index should be *maximized*.
- The Partition Entropy should be *minimized*.
- The Silhouette index should be *maximized*.

All results were computed with the *Fclust* package (Giordani, Ferraro and Serafini 2019; see for more details on each measure) in R. The results indicate 3-,4-, and 5-cluster solution are best. Our reasoning is that a 4-cluster solution yields the best compromise between producing well-defined clusters, preserving within-group sample size for later analyses, and parsimony. Additionally, and importantly, we used the human perception criterion (Grimmer & King 2010) to determine if the proposed solutions formed meaningful - i.e. interpretable - clusters, in which the 4- and 5-cluster solution emerged as forming the most easily recognizable subgroups.

Appendix C: Assignment uncertainty across iterations in Step 2

Figure C1 about here - see page 84

A majority of individuals receive the same assignments but there exists significant variation between the two random draws from \mathbf{p} . Nevertheless, our iterative procedure and averaging across iterations is justified by the significant variation that exists across iterations. This variation, in turn, is due to some observations having more balanced membership scores in \mathbf{p} . In spite of this uncertainty, however, the low Monte Carlo errors (not shown) around the empirical means in Table 1 suggests that while individuals observations' assignment may vary significantly across iterations, each iteration is composed of relatively similar subgroups.

A sufficiently high number of d iterations produces over all balancing and well differentiated subgroups.

Appendix D: Supplementary analyses

Table D1 about here - see page 69

Table D2 about here - see page 70

Figure D1 about here - see page 85

Figure D2 about here - see page 86

Figure D3 about here - see page 87

Figure D4 about here - see page 88

Tables

Cluster Assignment	Working	Peripheral petite	Urban middle	Socially
	class	bourgeoisie	class+	dependent
Prop. 2nd generation	0.33	0.37	0.52	0.52
Subjective religiosity $(0-2)$	1.29	1.20	1.20	1.32
Following dietary constraints (0-2)	1.56	1.46	1.44	1.61
Prop. living in $100k+$ city	0.80	0.39	0.80	0.77
Prop. working a job	0.70	0.69	0.74	0.35
Prop. female	0.37	0.47	0.40	0.64
Age $(18-60)$	39.91	38.03	32.65	30.83
Prop. with HS degree or more	0.19	0.27	0.70	0.22
Household income in $k \in (0-120)$	11.90	15.43	18.69	10.81
Prop. reporting subjective hardship	0.36	0.27	0.19	0.37
Prop. perceiving high level of discrimination	0.47	0.49	0.55	0.50
Prop. reporting discrimination within last 5 years	0.21	0.23	0.30	0.28
Prop. reporting high importance of religion in parental education	0.48	0.44	0.41	0.47
Prop. reporting transnational ties	0.75	0.74	0.70	0.72
Prop. living in top decile for $\%$ of North African immigrants	0.43	0.35	0.34	0.45
Prop. living in top decile for % of Sub-S African immigrants	0.27	0.16	0.26	0.25
Count	1580.66	685.17	1124.17	1985.01
Note : The table reports average, unweighted values by cluster for variab models presented (Isca step 3) among Muslim respondents. The results a	les of intere re averages	st in the final analyti for cluster means obt	ical sample used f cained from $d{=}50$	or all 0

iterations of stochastic assignment based on \mathbf{p} vector of membership probabilities (Isca step 2). Most cross-cluster differences are statistically significant and hence empirical standard deviations are not reported. Count are not round values due to averaging

number of respondents in each cluster across iterations.

Table 1: Empirical mean values for variables of interest in the analytical sample of Muslim respondents. Link back to text

Cluster Assignment	Working class	Peripheral petite bourgeoisie	Urban middle class+	Socially dependent
Prop. female	0.42	0.49	0.42	0.54
	(00.01)	(00.01)	(00.01)	(00.01)
Age	44.58	42.99	35.97	29.86
	(00.23)	(00.25)	(00.16)	(00.25)
Prop. with HS degree or more	0.17	0.16	0.81	0.27
	(00.01)	(00.01)	(00.01)	(00.01)
Per person household income in $k \in$	15.36	21.23	25.65	13.68
	(00.19)	(00.23)	(00.16)	(00.20)
Prop. living in 100k+ city	0.52	0.25	0.65	0.63
	(00.01)	(00.01)	(00.01)	(00.01)
Prop. working a job	0.90	0.91	0.90	0.36
	(00.01)	(00.01)	(00.00)	(00.01)
Count	970.64	839.88	1185.05	827.44
	(19.64)	(19.15)	(16.65)	(16.77)
Note: The table renorts average values	by cluster for yari	ablee nead in fuzzy cluetering (Ieo	as stan 1). Tha recults an	a strara dor

Table 2: Social structure of French native population. Link back to text

Note: The table reports average values by cluster for variables used in fuzzy clustering (Isca step 1). The results are averages for means obtained from d=500 iterations of stochastic assignment based on **p** vector of membership probabilities (Isca step 2), with standard deviations arising from assignment variation in parentheses. See ISCA step 1 and 2 for more details.

	Subjective religiosity High-Low Δ	Following dietary constraints High-Low Δ
C1: Working class		
Material insecurity	3.30	6.61
Discrimination	24.16	32.94
Parental socialization	41.97	25.68
Transnational ties	16.84	21.53
Replenishment	13.73	13.22
C2: Peripheral petite bourgeoisie		
Material insecurity	6.51	8.43
Discrimination	24.81	26.89
Parental socialization	39.41	32.84
Transnational ties	14.90	14.33
Replenishment	14.37	17.52
C3: Urban middle class $+$		
Material insecurity	5.94	9.16
Discrimination	20.46	26.04
Parental socialization	49.49	36.92
Transnational ties	9.96	13.38
Replenishment	14.15	14.51
C4: Socially dependent		
Material insecurity	5.49	9.04
Discrimination	22.51	28.05
Parental socialization	46.19	32.51
Transnational ties	14.58	14.91
Replenishment	11.23	15.49

Table 3: % decomposition of the difference between "High" and "Low" profiles for predicted religiosity values, by dimension of religiosity and clusters for 2nd generation Muslim respondents. Link back to text

Note: % do not add up to 100 due to rounding.

	Subjective religiosity High-Low Δ	Following dietary constraints High-Low Δ
C1: Working class		
Material insecurity	4.09	7.58
Discrimination	7.33	13.38
Parental socialization	56.56	30.23
Transnational ties	25.85	38.75
Replenishment	6.17	10.16
C2: Peripheral petite bourgeoisie		
Material insecurity	6.78	9.88
Discrimination	8.49	10.56
Parental socialization	47.74	32.15
Transnational ties	23.70	29.02
Replenishment	13.29	18.39
C3: Urban middle class $+$		
Material insecurity	7.66	11.63
Discrimination	7.93	12.12
Parental socialization	54.86	37.70
Transnational ties	19.02	24.18
Replenishment	10.53	14.37
C4: Socially dependent		
Material insecurity	10.64	8.12
Discrimination	14.59	17.42
Parental socialization	52.19	33.21
Transnational ties	18.33	24.72
Replenishment	4.24	16.53

Table D1: % decomposition of the difference between "High" and "Low" profiles for predicted religiosity values, by dimension of religiosity and clusters for Muslim respondents (1st and 2nd generation). Link back to text

Note: % do not add up to 100 due to rounding.

Cluster Assignment	Working	Peripheral petite	Urban middle	Socially
	class	bourgeoisie	$\mathrm{class}+$	dependent
Subjective religiosity (0-2)	0.86	0.69	0.69	0.84
Following dietary constraints (0-2)	0.63	0.43	0.44	0.75
Prop. Catholic immigrants	0.24	0.28	0.22	0.16
Prop. Muslim immigrants	0.35	0.23	0.27	0.45
Prop. natives	0.19	0.24	0.24	0.17
Prop. living in $100k+$ city	0.71	0.31	0.75	0.72
Prop. working a job	0.79	0.83	0.83	0.39
Prop. female	0.39	0.48	0.40	0.65
Age $(18-60)$	42.20	41.75	34.72	31.50
Prop. with HS degree or more	0.22	0.27	0.78	0.28
Household income in $k \in (0-120)$	14.42	20.39	23.42	12.89
Prop. reporting subjective hardship	0.29	0.17	0.12	0.31
Prop. perceiving high level of discrimination	0.51	0.51	0.57	0.53
Prop. reporting discrimination within last 5 years	0.11	0.09	0.13	0.17
Prop. reporting high importance of religion in parental education	0.32	0.24	0.23	0.30
Prop. reporting transnational ties	0.54	0.46	0.47	0.53
Prop. living in top decile for $\%$ of North African immigrants	0.27	0.17	0.19	0.31
Prop. living in top decile for % of Sub-S African immigrants	0.21	0.11	0.20	0.22
Count	5052.04	3469.22	4872.34	4904.40
Note: The table reports average, unweighted values by cluster for variabl models presented (Isca step 3). The results are averages for cluster means assignment based on p vector of membership probabilities (Isca step 2). N	les of intere s obtained fi Most cross-c	t in the final analytics in $d=500$ iterations luster differences are	ical sample used f s of stochastic statistically sign	or all ificant

and hence empirical standard deviations are not reported. Count are not round values due to averaging number of respondents in

each cluster across iterations.

Table D2: Empirical mean values for variables of interest in the analytical sample. Link back to text

Figures



Figure 1: Religiosity in Europe and the United States (Source: self-described religiosity from 1 "Extremely non-religious" to 7 "Extremely religious", International Social Survey Program on Religion, 2008). Link back to text



Figure 2: Religiosity ratio with natives, by religious group and immigrant generation. N.B.: Red line at 0 is the native level of religiosity, and 1:1 ratio would indicate similar religiosity levels between immigrants and natives. The religiosity measure is a linear combination of subjective religiosity, religious attendance, respect of religiously imposed dietary constraints, and wearing of a religious sign. Link back to text


Figure 3: Comparison between assimilation through a nominal group approach (top) and assimilation among multiple subgroups in the Inductive Subgroup Comparison Approach (bottom). Between group analysis occurs with black arrows within each lettered circle, while within group differences in assimilation pathways are expressed with bottom (orange) links between lettered circles. Link back to text



Figure 4: Intuitive logic and sources of variation across iteration in Step 1 and 2 of the Inductive Subgroup Comparison Approach as seen through a toy example. Link back to text



Figure 5: Religiosity across native subgroups (errors bare are 95% based on Monte Carlo errors). Link back to text



Figure 6: Breakdown of % count for membership in each cluster for the Muslim population, by generation and averaged across 500 iterations. The shares are weighted with sampling weights. Link back to text





Peripheral petite bourgeoisie Subgroup of reference in Urban middle class+ Socially dependent Predicting subjective religiosity: importance of religion in respondent's life (0-2 scale) 2G only All respondents Working class native population 1.0 0.5 0.0 -0.5 Muslim immigrants (ref: natives) -Catholic * importance of religion in parental education (high) -Muslim * subjective hardship (high) -Catholic immigrants (ref: natives) ncome (k€) -Subjective hardship (high) -Reports transnational ties -Muslim * interpersonal discrimination -Muslim * importance of religion in parental education (high) -Muslim * Maghribi immigrants in neighborhood (high) -Muslim * African immigrants in neighborhood (high) -Catholic * income -Catholic * subjective hardship (high) -General perception of discrimination (high) Reports interpersonal discrimination Importance of religion in parental education (high). Presence of Maghribi immigrants in neighborhood (high). Presence of African immigrants in neighborhood (high) Muslim * income Muslim * general perception of discrimination (high) Muslim * transnational ties Catholic * general perception of discrimination (high) Catholic * interpersonal discrimination Catholic * transnational ties Catholic * Maghribi immigrants in neighborhood (high) Catholic * African immigrants in neighborhood (high)

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errors. The model also includes interactions effects for immigrants identifying as Protestant, "Christian", and non-religious among second-generation and native respondents. Error bars are 95% confidence intervals based on Monte Carlo standard Figure 8: Plotted coefficients for regression models of subjective religiosity, by subgroups as well as one pooled model not shown). All models include sampling weights and controls for gender, age, squared age and education (not shown). For each variable, parameter estimates are vertically ordered as in the legend key. Link back to text

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Figure 9: Plotted coefficients for regression models of following religiously imposed dietary constraints, by subgroups as well as one pooled model among second-generation and native respondents. Error bars are 95% confidence intervals based "Christian", and non-religious (not shown). All models include sampling weights controls for gender, age, squared age on Monte Carlo standard errors. The model also includes interactions effects for immigrants identifying as Protestant, and education (not shown). For each variable, parameter estimates are vertically ordered as in the legend key. Link back text



Subgroup of reference in

native population

- All respondents
- Socially dependent Urban middle class+
- Peripheral petite bourgeoisie Working class

Predicting subjective religiosity: following dietary constraints (0-2 scale) 2G only



N.B: Horizontal line measures average predicted religiosity for natives

Figure 10: Predicted value for "High" and "Low" predictive profiles for subjective religiosity among 2nd generation Muslims, with values for all other variables held at the mean. "High" profile features income set at 25th percentile, high perception and report of discrimination, high parental socialization, transnational ties, and living in neighborhoods with high presence of North African immigrants, and "Low" profile with income set at 75th percentile and all other binary variables at 0. Error bars are 95% confidence intervals from Monte Carlo standard errors. Link back to text



N.B: Horizontal line measures average predicted religiosity for natives

Figure 11: Predicted value for "High" and "Low" predictive profiles for following religious imposed dietary constraints among 2nd generation Muslims, with values for all other variables held at the mean. "High" profile features income set at 25th percentile, high perception and report of discrimination, high parental socialization, transnational ties, and living in neighborhoods with high presence of North African immigrants, and "Low" profile with income set at 75th percentile and all other binary variables at 0. Error bars are 95% confidence intervals from Monte Carlo standard errors. Some values are higher than 2 because the prediction is linear. Link back to text



Figure 12: Religiosity differential in praying behavior in France. Source: European Social Survey, rounds 3-9. Error bars are 95% confidence intervals. Link back to text



Figure 13: Religiosity differential in praying behavior in Western European countries. Source: European Social Survey, rounds 3-9. Error bars are 95% confidence intervals. Link back to text



Figure C1: Assignment overlap among French native respondents in two randomly chosen iterations (ISCA step 2). Link back to text



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Interaction terms: Muslims

nteraction terms: Catholics

standard errors. The model also includes interactions effects for immigrants identifying as Protestant, "Christian", and non-religious (not shown). All models include controls for gender, age, squared age and education (not shown). For each

variable, parameter estimates are vertically ordered as in the legend key. Link back to text



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Interaction terms: Catholics

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education (not shown). For each variable, parameter estimates are vertically ordered as in the legend key. Link back to

Predicting subjective religiosity: importance of religion in respondent's life (0-2 scale) no religious sign 2G only

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and restricted to respondents who "never" wear a religious sign among second generation and native respondents. Error Figure D3: Plotted coefficients for regression models of subjective religiosity, by subgroups as well as one pooled model, bars are 95% confidence intervals based on Monte Carlo standard errors. The model also includes interactions effects for immigrants identifying as Protestant, "Christian", and non-religious (not shown). All models include controls for gender, age, squared age and education (not shown). For each variable, parameter estimates are vertically ordered as in the legend



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as well as one pooled model, and restricted to respondents who "never" wear a religious sign among second generation and native respondents. Error bars are 95% confidence intervals based on Monte Carlo standard errors. The model also models include controls for gender, age, squared age and education (not shown). For each variable, parameter estimates includes interactions effects for immigrants identifying as Protestant, "Christian", and non-religious (not shown). All are vertically ordered as in the legend key. Link back to text



Figure B1: Cluster validation measures across number of clusters for French native sample Link back to text