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Women's Agency in Egypt, Jordan, and Tunisia: The Role of Parenthood and Education

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Abstract

Women in Middle Eastern and North African countries continue to report low levels of agency, despite their increasing educational attainment and declining fertility rates. We address this paradox by considering how women's agency is linked to parenthood in Egypt, Jordan, and Tunisia and how this association is moderated by their level of education. We study three dimensions of instrumental agency: involvement in decision-making, financial autonomy, and freedom of movement using data for married women aged 18–49 from the Integrated Labor Market Panel Surveys: Egypt 2012 ($n = 7622$), Jordan 2016 ($n = 4550$), Tunisia 2014 ($n = 1480$). Results from multivariate regression models of these different dimensions demonstrate that married women who are mothers generally exhibit higher levels of agency than their counterparts who are childless, though this does not hold for every dimension and the strength of the association between parenthood and agency differs by dimension and country. We find a notable exception to this pattern of positive association in the Egyptian sample: parenthood *decreases* agency among Egyptian women with post-secondary education. Our results suggest that parenthood may only increase women's agency in settings with deeply entrenched patriarchal norms that imply little education for women.

Keywords Women's empowerment · Women's agency · Gender · Parenthood · Middle East and North Africa · Education

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Introduction

Most countries in the world have recognized the importance of women's agency (Klugman et al. 2014), as it has been found to be a relevant predictor of societal development as well as women's and their children's health and well-being (Doan and Bisharat 1990; Kishor 2000; Shroff et al. 2009, 2011; Yount et al. 2014). In Middle Eastern and North African (MENA) countries, women's empowerment and levels of women's agency are low because of deeply entrenched patriarchal norms (e.g. Yount et al. 2014; Samari 2017b). The persistence of low empowerment can be framed with the notion of the "MENA paradox" (Assaad et al. 2018). This concept describes the "peculiar" (Obermeyer 1992) demographic situation that female labor market participation is very low (International Labour Organization 2018) and does not correspond to women's increasing educational attainment and declining fertility rates in the region (World Bank 2013).

Even though total fertility declined considerably over the last decades to about replacement level in Tunisia, and about 3.5 in Egypt and Jordan (Eltigani 2009; Cetorelli and Leone 2012; Al Zalak and Goujon 2017; Engelhardt, Schulz, and Büyükkeçeci 2018), motherhood has been almost universal among married women (Gebel and Heyne 2014). Women are ascribed a reproductive role in the MENA region (Miles 2002) and motherhood is regarded as important for a woman's social position (Kandiyoti 1988; Yount 2005). This societal invariant puts the discussion about women's agency directly into the context of parenthood. Yet, there is a considerable gap of knowledge concerning parenthood as a determinant of women's agency in the MENA region. Women's agency is a component of women's empowerment (a process over time including resources, agency, achievements) and refers to women's ability to, "define their own life-choices and to pursue their own goals, even in the face of opposition from others" (Kabeer 1999, p. 438).

To date, few studies have examined how fertility influences women's agency (Lee-Rife 2010; Samari 2017a; Ruthbah 2019) and only one study analyzed how the birth of children is associated with women's agency in the MENA region, using data from the Egyptian Labor Market Panel Survey (Samari 2017a). Samari (2017a) found that first births and subsequent ones were positively associated with agency regarding decision-making and freedom of movement, but not with financial autonomy.

The present study extends present knowledge from Samari's (2017a) findings in two ways: First, using cross-sectional data from the Integrated Labor Market Panel Surveys (ILMPS; OAMDI 2018b), it confronts the Egyptian case of parenthood and women's agency with two other MENA countries, Jordan and Tunisia. This is important as the patriarchal context and levels of women's agency differ between MENA countries. The study provides evidence of different dimensions of instrumental agency—involvement in decision-making, access to household money and freedom of movement—as well as single aspects of these dimensions in all three countries. Second, we explore how the association between parenthood and instrumental agency is moderated by women's educational attainment

which is regarded a major impetus of agency. This will contribute to the understanding of the conditions under which parenthood and agency are associated.

Background

Women's Social Position in Egypt, Jordan, and Tunisia

Despite increases of socio-economic development and women's educational attainment, patriarchal values still dominate the MENA region and relegate women to subordinate roles (Kelly 2010). There is a widespread notion that family honor mainly depends on the conformity of women to certain norms (Miles 2002). This notion is based on familial relations that are historically rooted in "classic patriarchy" (Kandiyoti 1988, p. 274). In the Arab-Islamic family, the man is traditionally responsible for the support and protection of his children and wife, whereas the woman is expected to obey her husband, to bear (preferably male) offspring and to take care of children (Moghadam 2004). This "patriarchal contract" is institutionalized through the modern state in the *Muslim Family Law* or the *Personal Status Code* (Moghadam 2004, p. 145) which regulates many aspects of family life, such as marriage, divorce, or child custody. Therefore, women's rights are severely restricted.

Comparing Egypt, Jordan, and Tunisia, women in Tunisia have the highest degree of freedom (Kelly 2010) as Tunisia has a "pioneering role in women's issues" (Grami 2008, p. 350). In contrast, women in Egypt and Jordan are by law required to obey their husbands who may restrict their freedom of movement and access to employment (OECD 2017). In all three countries men are considered the heads of households according to the *Personal Status Codes* (Kelly 2010). The Jordanian *Personal Status Law* stipulates male legal guardianship (*welaya*) over single women until the age of 40 (Husseini 2010). For instance, Jordanian women need the consent of their male guardian (mostly father) to marry (OECD 2017). Only Tunisian men and women have equal rights to seek a divorce (Salem 2010). In Egypt and Jordan, a husband can divorce his wife unilaterally, whereas women must choose between a fault-based divorce and *khul'*. A woman who is divorced through *khul'* does not have to prove the fault of her husband but is required to compensate him (OECD 2017).

Despite fundamental achievements in human development (World Bank 2013), the Global Gender Gap Report 2018 ranked Tunisia, Egypt, and Jordan 119, 135, and 138 out of 149 countries, respectively (World Economic Forum 2018), indicating different and particularly low levels of gender equality in these countries. The *Social Institutions and Gender Index* classified Tunisia as *medium* in gender inequality, while Jordan and Egypt were classified as *high* and *very high* (Social Institutions and Gender Index 2014). In MENA countries, domestic violence and sexual harassment remain a serious concern in women's lives (Boy and Kulczycki 2008; Kelly 2010). Only few women own land and it is common that they only inherit half the share of the male heirs (OECD Development Centre 2014). Women are strongly underrepresented in powerful positions in politics and companies, and the female labor force participation rates remain the lowest in the world as women only

represent 22% of the MENA labor force (Lundvall et al. 2017). Jordan has the lowest female labor market participation rate worldwide (2017, p. 14%) for a country not at war (World Bank 2018). Women in the MENA region are usually not expected to work and be financially independent. Their earnings are considered an additive but not relevant part of the household income (Hoodfar 1997).

Women's Agency in the MENA Region

Women's agency is a multi-dimensional and context-specific construct (Kabeer 1999; Yount et al. 2016). In the literature, the terms agency, autonomy or empowerment are often used interchangeably (Thorpe et al. 2016). Following Kabeer's (1999) definition (see introduction), we regard women's agency as a component of women's empowerment. In the process of empowerment, women acquire resources (especially education) which serve to enhance their agency and achievements, for example on the labor market (Kabeer 1999). To include the multidimensionality of women's agency in our analysis, we consider several dimensions that are common measures and direct indicators of agency (Yount et al. 2016; Thorpe et al. 2016; Cheong et al. 2017; Richardson 2018): decision-making, freedom of movement, and financial autonomy. In this study, women's agency is confined to instrumental agency, setting aside intrinsic agency, like gender role attitudes.

Several studies have analyzed women's agency in the MENA region, mostly in Egypt (see Table 3 in the Appendix). The patriarchal context yields low levels of women's agency throughout the MENA region. Considering men as heads of households, viewing women as a protected group, and the dependence of family honor on women's norm conformity restricts women's freedom of movement, their involvement in decision-making, and their financial autonomy. For example, in 2005, in Minya (Egypt), less than 15% of ever-married women reported to decide on their own about their healthcare or visits to family or friends (Yount et al. 2014). Linos et al. (2010) found that in Jordan, in 2002, 12% of currently married women had no final voice on any decision about their own health, large or daily household purchases, visits, and daily meals. Using data of the Tunisian Labor Market Panel Survey of 2014, Assaad et al. (2017) found that involvement in household decisions is higher among women in urban areas than among women living in rural areas and that women's freedom of movement varies strongly in different regions. However, in no region or area are the majority of women allowed to move independently (Assaad et al. 2017). Samari (2017b) and Samari and Pebley (2018) showed that, for Egypt, living region and urbanity were positively associated with women's agency and fertility.

Further, studies have found that women's agency varies by women's educational attainment (Yount 2005; Samari and Pebley 2018), as education may equip women with greater negotiation skills and motivation to maintain or improve their agency. Moreover, it is likely that patriarchal forms of marriage in the MENA region, such as consanguinity and child marriage have negative implications on women's agency. Research has shown that women who marry young tend to have lower agency and

to be more dependent on their husbands than those who marry older (Jensen and Thornton 2003).

Despite the normative power of the region's patriarchal context, women in the MENA region were found to be inclined to have (more) agency (Mensch et al. 2003; Drolet 2010). For example, a majority of young unmarried Egyptian women want to be involved in family decisions (Mensch et al. 2003). Further, the study of Samari and Pebley (2018) showed that women's agency is not stable but changes over time.

Previous Research on Women's Agency and Parenthood

To the best of our knowledge, only three studies have analyzed the effect of fertility on women's agency (Lee-Rife 2010; Samari 2017a; Ruthbah 2019) and only one of them was conducted in a MENA country (Samari 2017a). In contrast, a large body of research in developing countries has explored whether women's agency affects the use of contraceptives and fertility (reviewed in Upadhyay et al. 2014; Prata et al. 2017). The evidence is mixed: depending on the context and the measurement of agency, studies have found positive or negative associations. Most of these studies cover South Asian or sub-Saharan African countries and only very few have focused on the MENA region where women's roles are quite different. Further, almost all of these studies are cross-sectional, which makes it difficult to understand the direction of the relation between women's agency and fertility. Samari (2017b) performed one of the first analyses with longitudinal data in the MENA region, investigating the effect of women's agency on fertility outcomes in Egypt with data from the 2006 and 2012 ELMPS. Contrary to the author's expectation, the study's results indicated a positive impact of women's agency on fertility.

Drawing on the seminal work of Samari (2017a), the present study is only the second to consider women's agency as a consequence of parenthood in the MENA region. Yet, it is the first that studied the association of parenthood and women's agency in more than one MENA country for aggregate dimensions as well as for single aspects of agency and how these associations are moderated by women's educational attainment.

Theoretical Considerations and Hypotheses

Theories of how women's agency could affect fertility include the assumption that women with agency have a voice in fertility decisions (Samari 2019b). But how could the reverse effect of parenthood on women's agency be explained? In the literature, it is assumed that fertility could affect women's agency because reproductive capacity is a central part of a woman's identity in most societies (Lee-Rife 2010; Samari 2017a). We provide a theoretical justification for an association between parenthood and women's agency that builds upon this assumption.

Many longitudinal studies conducted in a Western context have shown that the gender division of labor within a partnership becomes more traditional after the transition to parenthood (Baxter et al. 2008). One explanation for this is based on changes in bargaining power after the transition to parenthood. According to

classical resource theory, the partner with the most valued resources has more power over the other within a marriage. Resources, in this context, are broadly defined as “anything that one partner may make available to the other, helping the latter satisfy his needs or attain his goals” (Blood and Wolfe 1965, p. 12). In the context of the MENA region, motherhood can be regarded as a resource, as motherhood is very important for a woman’s social position within the family (Kandiyoti 1988; Yount et al. 2016). Due to the traditional gender division of responsibilities, being a mother opens new possibilities for power compared to childless wives. According to Heer (1963), a major resource of a woman is her ability to adequately fulfill her role as mother to children. Henry (2011, p. 258) found that Egyptian women, “hesitated to challenge fixed role stereotypes [...] because this would mean giving up the only form of power they could have”.

Agency is not fixed but can be negotiated. Since the transition to parenthood is a crucial life event that comes along with major changes, it triggers processes of negotiating power within marriage. A woman’s social status improvement combined with the tasks she is expected to fulfill in her role as mother gives her the possibility to expand her instrumental agency in such negotiation processes. More specifically, a woman can argue that she needs more freedom for fulfilling these household tasks, to ensure a functioning everyday family life and take good care of the children. Therefore, our central hypothesis is that parenthood is positively associated with women’s instrumental agency (H1).

According to bargaining models, education increases a woman’s bargaining power (McElroy 1990; Kantor 2003). Therefore, we first expect women with higher education to realize higher levels of instrumental agency in all three countries compared to women with lower education (H2a). This argument is supported by the findings that show level differences of women’s agency in educational attainment (Yount 2005; Samari and Pebley 2018). Second, we hypothesize that the positive association between parenthood and agency (if there is any) differs by women’s educational level. We expect it to be stronger for women with higher educational attainment than for women with lower educational attainment (H2b). Due to greater bargaining skills, it should be easier for higher educated women to use the resource of motherhood to expand their instrumental agency, and therefore they may attain a higher increase in agency than lower educated women.

Method

Data and Sample

We used data from the Integrated Labor Market Panel Surveys (ILMPS) (OAMDI 2018b) that include harmonized data from all panel waves of the national Labor Market Panel Surveys (LMPS) in Egypt, Jordan, and Tunisia. The LMPS are nationally representative samples of households in these three countries which survey labor market and demographic information over time, including information on several dimensions of women’s agency. Within the ILMPS, we used the most recent data for each country: Egypt 2012, Jordan 2016, and Tunisia 2014.

We restricted each country sample to married women aged 18–49 (Egypt: $n = 8794$; Jordan: $n = 4716$; Tunisia: $n = 2103$) because comparable information on fertility and agency for all countries is only available for married women in this age range. We removed cases that had missing values on parenthood, any item of women's agency or any control variable: The final analytic samples comprise information on 7,622 women in Egypt, 4,550 women in Jordan, and 1,480 women in Tunisia.

Measures of Women's Agency

The ILMPS includes information on three different dimensions of women's instrumental agency: (1) involvement in decision-making, (2) financial autonomy, and (3) freedom of movement. Information on intrinsic agency, such as gender role attitudes, is not included in the ELMPS 2012 or TLMPS 2014.

Involvement in decision-making was measured with six variables. Women were asked who in the family usually has the final voice on a number of decisions: (1) making large household purchases; (2) making household purchases for daily needs; (3) visits to family, friends, or relatives; (4) what food should be cooked each day; (5) getting medical treatment or advice for oneself; (6) buying clothes for oneself. Response options for all items were: "respondent alone"; "husband"; "respondent and husband jointly"; "in-laws"; "respondent, husband, and in-laws jointly"; "others"; "not applicable" (coded as missing). We recoded this scale into a binary variable for each item, indicating whether or not the woman is involved in the decision. Additionally, we created a count variable that captures the number of decisions in which the woman is involved (range: 0–6). All items loaded on one factor, and the internal consistency of the scale was acceptable (Egypt: $\alpha = 0.82$; Jordan: $\alpha = 0.84$; Tunisia: $\alpha = 0.76$).

Financial autonomy was measured with the single-item question "Do you have direct access to household money in your hand to use?" Replies were coded binary as yes/no.

Freedom of movement was measured with three items. Women were asked if they can't go alone, need permission, only have to inform, or can go without permission to a number of places. For our analysis, we selected as target places: (1) local market, (2) local health center or doctor, (3) home of relatives, friends, or neighbors. The binary dependent variable discerned "can't go alone or need permission" versus "only have to inform or can go without permission"; "not applicable" was coded as missing. Again, we created a count variable, measuring the number of places the woman only has to inform or can go without permission (range: 0–3). All items loaded on one factor, and the internal consistency of the scale was acceptable (Egypt: $\alpha = 0.71$; Jordan: $\alpha = 0.87$; Tunisia: $\alpha = 0.80$).

Predictor and Moderator

The main predictor, parenthood, was a dichotomous variable: a woman was coded as childless if she had never given birth. If a woman had ever given birth and if that birth or at least one of these births was a live birth, she was coded as having at

least one child. As the ILMPS does not include information as to whether a woman had ever given birth, we added it from the separate datasets ELMPS 2012 (OAMDI 2016b), JLMPS 2016 (OAMDI 2018a), and TLMPS 2014 (OAMDI 2016a).

The moderating variable, educational attainment, was measured as the stage of education the woman attended in her last year of schooling, grouped in three categories: (1) no more than basic education, (2) secondary education, and (3) post-secondary education. We refer to “no more than basic education” as lower education and to “secondary education” and “post-secondary education” as higher education.

Controls

Our models controlled for variables known to be associated with variations in women’s agency and parenthood: age, age-squared (divided by 100), education, ever worked (yes/no), region of residence, living in urban area (yes/no), husband is related by blood (yes/no), and age at first marriage. To reduce missing values for age at first marriage and if the woman is related by blood to her husband, we added this information for Egypt from the ELMPS 2006 (OAMDI 2016b). Region of residence differs by country; Egypt: Lower Egypt, Upper Egypt; Jordan: North, Middle, South; Tunisia: North, North West, Center East, Center West, South East, South West.

Analytic Strategy

We applied multivariate negative binomial regression models to estimate the dimensions “involvement in decision-making” and “freedom of movement” using the count variables as outcomes (Table 2). Additionally, we applied multiple logistic regression models to estimate married women’s involvement in decision-making, financial autonomy, and freedom of movement, running separate models for each country and for each item of all dimensions of women’s agency (10 models for each country). We reported average marginal effects (AMEs) for each model in Tables 6–8 in the Appendix to this article. For the purpose of visualization, and to show level differences between the dimensions and items of women’s agency between the three countries, we plotted predicted probabilities with 90%-confidence intervals (due to small sample size) in Fig. 1.

We checked the robustness of the results with several modifications to our modeling approach and with additional analyses which did not alter the results and conclusions. Most notably, we added a supplementary analysis on the association between having a son and women’s agency which is documented in the online supplement to this article. The results show a significant association between having a son and freedom of movement in Egypt and Tunisia, but no association for the other two dimensions in all three countries (see Supplementary Table 1). In a second additional analysis, we used panel data from Egypt (ELMPS 2006 and 2012) and Jordan (JLMPS 2010 and 2016) to compare women’s agency before and after the transition to parenthood (see Supplementary Table 2).

Results

Descriptive Results

Table 1 shows the descriptive statistics on women's agency, parenthood, education, and all control variables. In all three countries, about 90% of all women have at least one child. Women in the sample of Tunisia are slightly older and less educated than women in Egypt and Jordan. 84% of all Tunisian women do not have more than basic education. Jordanian women are more highly educated than women in Egypt: 30% of all women have post-secondary education compared to 19% in Egypt. In Tunisia, 37% of all women have been employed compared to 16% in Jordan. The low share of women who have been employed in Jordan stands in opposition to the relatively high share of Jordanian women with post-secondary education. In Tunisia, fewer women are related by blood to their husband and the mean age at first marriage is higher than in Egypt and Jordan. In Jordan, 75% of all women live in urban areas which is much higher than in Tunisia and Egypt (both 42%).

There is statistically significant regional heterogeneity between the dimensions of women's agency. The number of decisions a woman is involved in is higher in Jordan than in Egypt and Tunisia, however, the share of women who have access to household money and the number of places to which a woman can move freely is much lower in Jordan than in Egypt and Tunisia. In Tunisia, women's involvement in decision-making and freedom of movement is higher than in Egypt, whereas the share of women who have access to household money is lower than in Egypt.

Table 1 also shows within-country level differences between the dimensions of agency and between the items of each dimension: While the share of women who are involved in decision-making is above 70% for most items, the share of women who can move freely is below 50% in all countries and only 10% in Jordan. In Egypt, women's freedom of movement to the market is much higher than freedom of movement to the doctor or friends, and in all countries women's involvement in decision-making about household purchases is lower than women's involvement in other decisions.

Table 1 Descriptive statistics on women's agency, parenthood, and control variables

	Egypt (<i>n</i> = 7622)	Jordan (<i>n</i> = 4550)	Tunisia (<i>n</i> = 1480)	Country differences ^a
<i>Women's agency</i>				
Involvement in decision-making				
Large household purchases	.550	.788	.720	a, b, c
Daily need household purchases	.746	.683	.618	a, b, c
Visits to family or friends	.715	.875	.885	a, c
Food cooked each day	.831	.906	.891	a, c
Getting medical treatment	.766	.909	.920	a, c
Buying clothes	.793	.928	.916	a, c
Count	4.400 (1.879)	5.087 (1.564)	4.949 (1.470)	a, b, c
Access to household money	.589	.264	.528	a, b, c
Freedom of movement				
To the market	.350	.100	.267	a, b, c
To the doctor	.168	.100	.255	a, b, c
To relatives, friends, or neighbors	.183	.103	.251	a, b, c
Count	0.700 (0.989)	0.303 (0.803)	0.772 (1.106)	a, b, c
<i>Main predictor</i>				
Parenthood	.889	.892	.905	
<i>Controls</i>				
Age	30.860 (7.846)	33.401 (8.338)	37.201 (7.578)	a, b, c
Education				
Not more than basic	.422	.551	.840	a, b, c
Secondary	.387	.148	.078	a, b, c
Post-secondary	.191	.300	.082	a, b, c
Ever worked	.270	.161	.370	a, b, c
Age at first marriage	20.792 (3.814)	21.765 (4.649)	24.032 (5.335)	a, b, c
Husband related by blood	.298	.285	.237	b, c
Urban	.417	.747	.415	a, b
<i>Region</i>				
Egypt				
Lower Egypt	.601	—	—	
Upper Egypt	.399	—	—	
Jordan				
Middle	—	.454	—	
North	—	.388	—	
South	—	.158	—	
Tunisia				
North	—	—	.296	
North West	—	—	.164	
Center East	—	—	.218	

Table 1 (continued)

	Egypt (<i>n</i> = 7622)	Jordan (<i>n</i> = 4550)	Tunisia (<i>n</i> = 1480)	Country differences ^a
Center West	–	–	.184	
South East	–	–	.103	
South West	–	–	.037	

Integrated Labor Market Panel Surveys (Egypt 2012, Jordan 2016, Tunisia 2014)

^a 'a' denotes differences between Egypt and Jordan, 'b' between Jordan and Tunisia, and 'c' between Egypt and Tunisia which are significantly different from zero (two-sample *t* tests; $p < 0.5$); proportions or means, standard deviations in parentheses

Results from Multivariate Analysis

Table 2 shows the results of the multivariate negative binomial regression models of involvement in decision-making and freedom of movement and the results of the multivariate logistic regression models of access to household money. Figure 1 shows predicted probabilities of all single items of women's agency for childless women and women with children by parenthood, which were derived from the logistic regression models in Tables 6, 7, 8 (AMEs) in the Appendix by setting all covariates at their observed values (Williams 2012).

Involvement in Decision-Making

The results in Table 2 show positive but not significant associations between parenthood and involvement in decision-making in Egypt and Tunisia. In Jordan, the association is negative and also not significant.

Figure 1 reveals strong, positive significant associations between parenthood and the decision about daily need household purchases in Egypt and Tunisia: Egyptian mothers' predicted probability was 4 percentage points (p.p.) higher compared to childless women ($p < 0.05$), and in Tunisia, mothers' predicted probability to be involved in this decision was 9 p.p. higher than for childless women ($p < 0.1$). Further, there are notable differences in predicted probabilities regarding the decision about what food to be cooked (8 p.p.; $p < 0.05$) and large household purchases (5 p.p.) in Tunisia.

Figure 1 shows negative associations for the decision about large and daily need household purchases in Jordan: women with children have a 5 p.p. lower predicted probability to be involved in the decision about daily need purchases and a 3 p.p. lower predicted probability to be involved in the decision about large purchases. For the decision about daily need purchases, the AME is significant ($p < 0.05$).

Financial Autonomy

Table 2 and Fig. 1 show positive, significant associations between parenthood and access to household money in all three countries. In Tunisia, the predicted probability is 11 p.p. higher for mothers than for childless women ($p < 0.05$). This difference is greater than in Egypt (3 p.p.; $p < 0.1$) and Jordan (9 p.p.; $p < 0.001$).

Table 2 Coefficient estimates for parenthood and education from multivariate negative binomial regression models (involvement in decision-making and freedom of movement) and from multivariate logistic regression models (access to household money)

	Involvement in decision-making			Access to household money			Freedom of movement		
	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia
<i>Without interaction term between parenthood and education</i>									
Parenthood ^a	0.020 (0.019)	-0.018 (0.022)	0.061 (0.045)	0.138 ⁺ (0.082)	0.533 ^{***} (0.134)	0.487 [*] (0.204)	0.146 [*] (0.063)	0.128 (0.164)	0.013 (0.148)
Education ^b									
Secondary	0.070 ^{***} (0.013)	0.072 ^{***} (0.019)	0.041 (0.044)	0.089 (0.057)	0.255 [*] (0.104)	0.251 (0.219)	0.007 (0.040)	0.248 (0.133)	0.033 (0.148)
Post-secondary	0.098 ^{***} (0.017)	0.083 ^{***} (0.017)	0.087 [*] (0.044)	0.231 ^{**} (0.078)	0.331 ^{***} (0.088)	0.058 (0.219)	-0.006 (0.054)	0.114 (0.122)	0.207 (0.148)
Observations	7,622	4,550	1,480	7,622	4,550	1,480	7,622	4,550	1,480
<i>With interaction term between parenthood and education</i>									
Parenthood	0.071 [*] (0.033)	-0.026 (0.029)	0.053 (0.049)	0.228 ⁺ (0.130)	0.673 ^{***} (0.196)	0.459 [*] (0.223)	0.111 (0.101)	0.189 (0.219)	-0.029 (0.162)
Education									
Secondary	0.119 ^{**} (0.041)	0.068 (0.063)	0.060 (0.140)	0.089 (0.164)	0.475 (0.387)	-0.058 (0.650)	-0.215 (0.135)	0.350 (0.455)	0.146 (0.469)
Post-secondary	0.187 ^{***} (0.044)	0.064 (0.045)	0.016 (0.127)	0.543 ^{**} (0.191)	0.584 [*] (0.272)	0.067 (0.594)	0.135 (0.139)	0.240 (0.334)	-0.285 (0.462)

Table 2 Continued

	Involvement in decision-making			Access to household money			Freedom of movement		
	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia
Parenthood*Education				Tab2					
Parenthood**Secondary	- 0.054 (0.043)	0.005 (0.066)	- 0.020 (0.147)	0.000 (0.174)	- 0.237 (0.400)	0.348 (0.688)	0.242 ⁺ (0.140)	- 0.112 (0.474)	- 0.124 (0.494)
Parenthood**Post-secondary	- 0.102* (0.046)	0.022 (0.047)	0.081 (0.134)	- 0.367 ⁺ (0.202)	- 0.277 (0.282)	- 0.011 (0.633)	- 0.167 (0.146)	- 0.140 (0.349)	0.546 (0.484)
Observations	7,622	4,550	1,480	7,622	4,550	1,480	7,622	4,550	1,480

Integrated Labor Market Panel Surveys (Egypt 2012, Jordan 2016, Tunisia 2014)

Reference categories: ^aNo children, ^bNo more than basic education; Models controlled for education, age, age squared/100, ever worked, age at first marriage, husband related by blood, region, urban; Full models are presented in Tables 4 and 5 in the Appendix

Standard errors in parentheses

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ ⁺ $p < 0.1$

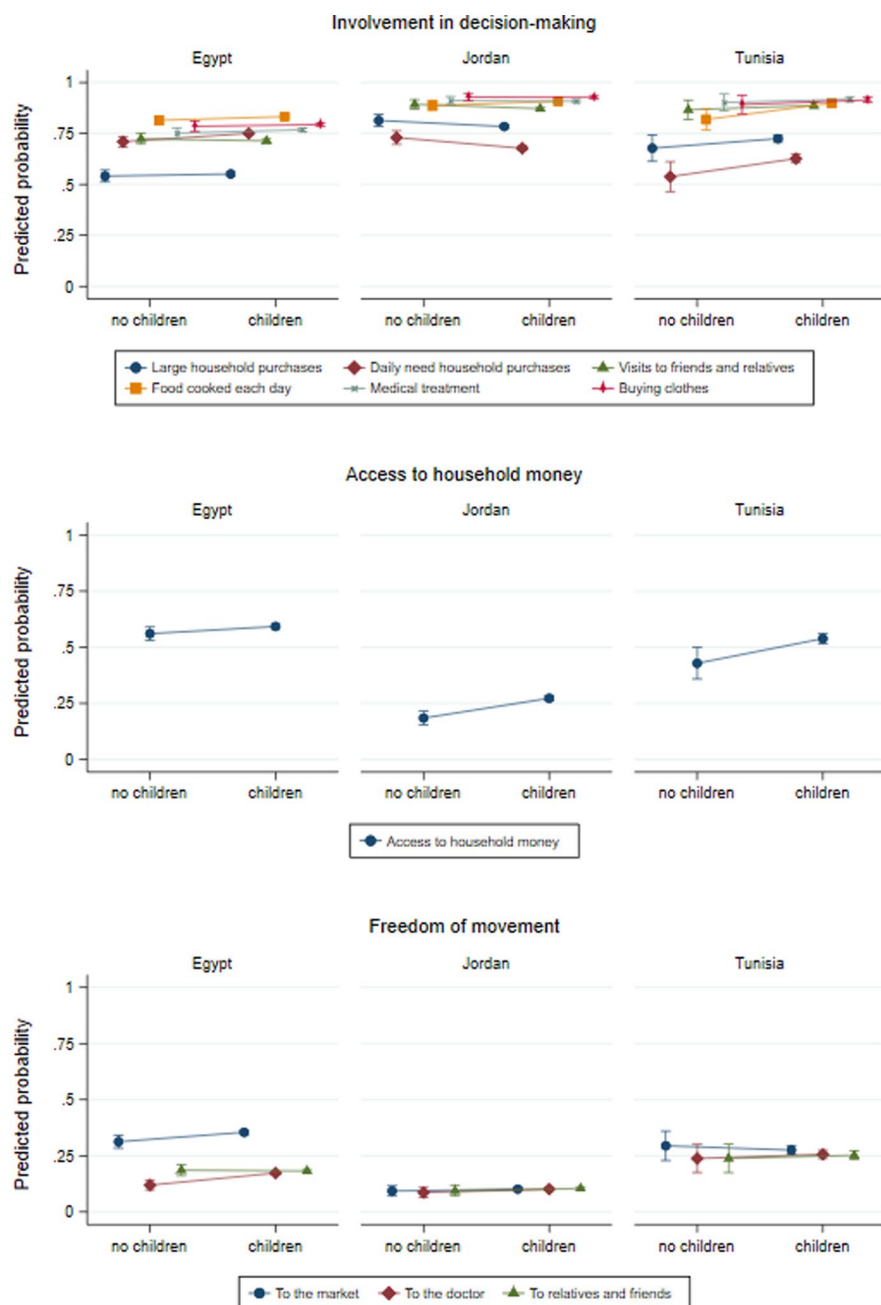


Fig. 1 Predicted probabilities of women's agency in Egypt, Jordan, and Tunisia, by parenthood. Integrated Labor Market Panel Surveys (Egypt 2012, Jordan 2016, Tunisia 2014). Predicted probabilities with 90%-confidence intervals. The predictions were derived from Tables 6–8 in the Appendix. Models controlled for education, age, age squared/100, ever worked, age at first marriage, husband related by blood, region, urban; covariates were kept at their observed values (Color figure online)

Freedom of Movement

Table 2 shows positive associations between parenthood and freedom of movement in all three countries (significant only in Egypt; $p < 0.05$).

Figure 1 shows significant positive associations between parenthood and freedom of movement to the market and to the doctor in Egypt: Compared to childless women, mothers have a 4 p.p. higher predicted probability to go to the market independently ($p < 0.05$) and a 5 p.p. higher predicted probability to go to the doctor independently ($p < 0.001$). In Jordan and Tunisia, we find positive associations between parenthood and freedom of movement, except for going to the market in Tunisia (Fig. 1). These associations are weak and not significant.

The Role of Education

Table 2 shows positive, significant associations between having post-secondary education and involvement in decision-making in all three countries and in Egypt and Jordan also for access to household money. There is no positive, significant association between having higher education and freedom of movement in all three countries.

To explore how the association between parenthood and women's agency is moderated by women's educational attainment, we included interaction terms between parenthood and education in the models (see lower part of Table 2). Results for Jordan and Tunisia must be interpreted carefully, as the number of cases is rather low, especially for childless women with post-secondary education. In most models, the interaction effects of parenthood and education are not significant. However, in Egypt, Table 2 shows a significant negative association between parenthood and involvement in decision-making and access to household money for women with post-secondary education ($p < 0.05$ and $p < 0.1$, respectively). For freedom of movement the association for Egyptian women with post-secondary education is negative, but not significant.

Discussion

The present study was the first to explore the association between parenthood and women's agency in different countries of the MENA region. It furthered the study of Samari (2017a) by comparing this association in different MENA countries that are heterogeneous in their levels of women's agency and by exploring how the relationship is moderated by educational attainment. Many of the results of our study supported our central hypothesis that parenthood is positively associated with women's instrumental agency (H1). This supported our argument that parenthood triggers negotiation processes that may increase mothers' agency based on a status increase and the social expectation to adequately fulfill the mother-role.

Three results stood out: First, we found a positive association between parenthood and financial autonomy in all three countries, although the strength of this association differs between countries (higher AME in Tunisia than in Jordan and higher AME in Jordan than in Egypt). Second, we found positive associations

between parenthood and freedom of movement, although this was significant only in Egypt. Third, we found mixed results for involvement in decision-making, i.e., significant positive associations for the decision about daily need household purchases in Egypt and Tunisia, but a significant negative association in Jordan. We found no significant association between parenthood and the count variable of involvement in decision-making.

Finding no significant associations for freedom of movement in Jordan and Tunisia and no significant associations for many items of decision-making (even a negative significant association for the decision about daily need household purchases in Jordan) did not support our claim that parenthood helps women to increase their agency.

Overall, our findings were not completely in line with those of Samari (2017a), who did not find a significant association between first birth and financial autonomy in Egypt. However, the AME of parenthood on access to household money in Egypt (0.03) is much smaller than in Jordan (0.09) and Tunisia (0.12) and it is only significant at the 0.10 level. The interplay between parenthood and women's agency in our study is in line with empirical evidence in the western context that parenthood influences gender-role behavior (Baxter et al. 2008). However, it does not align with the results of Lee-Rife (2010), who found no association between reproductive events like unwanted or mistimed pregnancies and women's agency in India.

Our expectation that women with higher education realize higher levels of agency compared to women with lower education (H2a) was confirmed for involvement in decision-making in all countries and for access to household money in Egypt and Jordan. However, hypothesis H2a was not supported for freedom of movement in all three countries, which is in line with Samari and Pebley's (2018) observation in Egypt. These results may be explained by the strong patriarchal context in the countries under consideration. Patriarchal structures may hinder women's ability to transform their educational resources to improve their agency in all dimensions. Resources have different impacts on women's agency in different social contexts (Hanmer and Klugman 2016): Having children and fulfilling the mother role, which is in line with the patriarchal context, may be a better resource to strengthen women's bargaining power within these patriarchal contexts.

Our hypothesis that the positive association between parenthood and women's agency is stronger for women with higher educational attainment than for women with lower educational attainment (H2b) was not confirmed. Instead, we found significant results that indicate a negative association between parenthood and women's agency for women with post-secondary education in Egypt. Women with very high education may not gain an improvement of bargaining power by having children, as it may weaken their other resources connected to earnings and employment. Women in the MENA region with lower education are less likely to be employed than higher educated women (Gebel and Heyne 2014). While motherhood could mean an increase of women's agency for lower educated women, it may decrease women's agency for higher educated women, as giving birth to the first child could mean a decrease in resources due to lower working hours and earnings, smaller career

options or even leaving employment. Therefore, parenthood may only increase a woman's agency in a very patriarchal and gender-traditional setting, where the wife has low or no education, is not employed, and does not seek a professional career.

Due to the patriarchal context and the strong gender division of roles and responsibilities in the MENA region, motherhood is very important for women's social position. If parenthood is tied to women's value or social position, it may increase women's agency. At the same time, it could mean that women's power and freedom is limited to the mother role, which is only a contextual freedom but not an individual freedom. As our analysis showed, education is an important determinant of women's agency, however, support of education or female labor market participation is not enough to significantly enhance women's agency (Assaad et al. 2015). In conclusion, a change in gender norms is needed to support women's agency in all spheres of life. The change from traditional to egalitarian gender role attitudes due to worldwide modernization processes is, still, less pronounced in the MENA region (Inglehart and Norris 2003).

Limitations and Future Research on Women's Agency

Obviously, our study is not without limitations. Most notably, there are two drawbacks concerning the sample size: first, the analytic sample size in Tunisia is much smaller than in Egypt and Jordan, leading to larger confidence intervals in the latter country. Second, the share of women without children is very low in all three samples. As in the MENA region, transition to parenthood usually takes place about one year after marriage (Gebel and Heyne 2014). It seems obvious that only a small share of women do not have children in a sample restricted to married women.

Another major methodological drawback of our study is the cross-sectional design that does not allow us to determine the causal relationship between parenthood and women's agency in the three countries. Current data does not yet support estimating large-scale causal models, though much effort is made to improve the data situation in the MENA region. Currently there are only two panel waves for Jordan and only one panel wave for Tunisia available. Therefore, we were not able to compare the effect of *transition* to parenthood on women's agency between the three countries Egypt, Jordan, and Tunisia. However, Samari (2017a) has used longitudinal data and has found a positive association between first birth and decision-making and freedom of movement in Egypt.

As we found level differences of women's agency and differences in the association with parenthood between Egypt, Jordan, and Tunisia, future studies should explore the reasons for these country differences. Future longitudinal analyses could provide causal evidence for the (different) influence of transition to parenthood on women's agency in the MENA region. In particular, they could provide deeper insight in the mixed results for Jordan. Further, as Lee-Rife (2010) has explored in

the context of India, it would be interesting how other reproductive events, e.g. abortion or stillbirths, affect women's agency in the MENA region. Also, in addition to the study of Samari (2017a) that explored the effect of subsequent births on women's agency in Egypt, more knowledge on how the number of children affects women's agency in the MENA region is needed, and how this association differs between countries with different TFRs or different social expectations depending on parity.

Knowledge on changes of women's agency over the life course is important for the development of social policies aiming to increase women's agency. It is up to future longitudinal studies to explore the causal effect of transition to parenthood—a life course transition associated with major changes within marriage and women's daily life—on women's agency in the MENA region.

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Compliance with Ethical Standards

Conflict of interest The authors declare no conflicts of interest.

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Appendix

See Tables 3, 4, 5, 6, 7 and 8.

Table 3 Compilation of studies on women's agency in the MENA region

Study	Data	Dependent variable(s)	Dimension(s) of women's agency
Afif (2007)	Egypt Demographic and Health Survey 2000	Passive lactational amenorrhoea method use	Decision-making
Afif (2009)	Egypt Demographic and Health Survey 2000	Intention to continue the practice of female genital cutting	Decision-making
Afif et al. (2010)	Urban Health Study 2003 (Beirut, Lebanon)	Cigarette smoking	Decision-making, freedom of movement, gender role attitudes
Al-Riyami and Afif (2003)	Oman National Health Survey 2000	Marital fertility	Decision-making, freedom of movement
Al-Riyami, Afif, and Mabry (2004)	Oman National Health Survey 2000	Contraceptive use	Decision-making, freedom of movement
AlSumri (2015)	Egypt Demographic and Health Survey 2008	Contraceptive use	Decision-making
Assaad et al. (2014)	Egypt Labor Market Panel Survey 2012	Women's agency (individual and socio-demographic determinants)	Decision-making, freedom of movement
Assaad et al. (2015)	Egypt Population Census 2006, Egypt Demographic and Health Survey 2008, Egypt Labor Market Panel Survey 2012	Women's agency (contextual and community-level determinants)	Decision-making, freedom of movement
Assaad et al. (2017)	Tunisia Labor Market Panel Survey 2014	Women's agency (descriptive statistics, variation by individual and socio-demographic variables)	Decision-making, freedom of movement
Cheong et al. (2017)	Egypt Labor Market Panel Survey 2006 and 2012	Women's agency (Women's Agency Scale)	Decision-making, freedom of movement
Chiang et al. (2012)	Survey 2007 in a village in the Giza Governorate, Egypt	Use of maternal health services	Decision-making
Crandall et al. (2016)	Egypt Labor Market Panel Survey 2006	Post-marital agency (determinant: age at first marriage)	Decision-making, freedom of movement, gender role attitudes
Doan and Bisharat (1990)	Follow-up Health and Population Assessment of four urban settlements in Amman, Jordan 1985	Child nutritional status	Structural position within the household

Table 3 (continued)

Study	Data	Dependent variable(s)	Dimension(s) of women's agency
Govindasamy and Malhotra (1996)	Egypt Demographic and Health Survey 1988	Current use of contraceptives and perceived role in making reproductive decisions	Decision-making, freedom of movement, financial autonomy
Kawaguchi et al. (2014)	Survey 2007 in a village in the Giza Governorate, Egypt	Maternal health service utilization	Decision-making, freedom of movement, economic security and stability, support by family and freedom from domination, participation in society
Kishor (1995)	Egypt Demographic and Health Survey 1988	Women's agency (determinants: demographic outcomes, individual and socioeconomic variables)	Decision-making, freedom of movement
Linós et al. (2010)	Jordan Demographic and Health Survey 2002	Justification of wife beating	Decision-making
Salem et al. (2018)	Egypt Demographic and Health Survey 2005 and 2012 follow-up survey in Minya, Egypt	Women's agency (determinant: women's work)	Economic decision-making, freedom of movement, gender role attitudes
Samari (2017a)	Egypt Labor Market Panel Survey 2006 and 2012	Women's agency (determinants: first and subsequent births)	Decision-making, freedom of movement, financial autonomy
Samari (2017b)	Egypt Labor Market Panel Survey 2006 and 2012	Having given birth and number of births	Decision-making, freedom of movement, financial autonomy, gender role attitudes
Samari (2018)	Egypt Demographic and Health Survey 2005, 2008, and 2014	Contraceptive method use	Decision-making, gender role attitudes
Samari (2019a)	Egypt Labor Market Panel Survey 2006 and 2012	Women's agency (determinant: return migration)	Decision-making, gender role attitudes
Samari (2019b)	Egypt Labor Market Panel Survey 2006 and 2012	Number of births	Decision-making, freedom of movement, gender role attitudes
Samari and Pebley (2018)	Egypt Labor Market Panel Survey 2006 and 2012	Women's agency (individual and household determinants)	Decision-making, freedom of movement, financial autonomy

Table 3 (continued)

Study	Data	Dependent variable(s)	Dimension(s) of women's agency
Yount (2005)	Household Survey in Minya, Egypt 2004	Women's agency, gender preference (individual and socio-economic determinants)	Decision-making
Yount and Agree (2004)	World Health Organization Collaborative Study on Social and Health Aspects of Aging 1990 Egypt and Tunisia	Agency of older women (individual and socio-economic determinants)	Decision-making
Yount et al. (2018)	Egypt Labor Market Panel Survey 1998–2012	Long-term economic women's agency (determinant: women's first marriage at 18 years or older)	Economic decision-making, women's market work
Yount et al. (2014)	Egypt Demographic and Health Survey 2005 and 2012 follow-up survey in Minya, Egypt	Generalized anxiety	Decision-making
Yount et al. (2016)	Egypt Labor Market Panel Survey 2006	Women's agency (measurement)	Decision-making, freedom of movement, gender role attitudes
Zaky (2014)	Data from Ain El-Sira Experiment, Egypt	Women's agency (determinant: conditional cash transfer program)	Decision-making, gender role attitudes

Table 4 Coefficient estimates from multivariate negative binomial regression models (involvement in decision-making and freedom of movement) and from multivariate logistic regression models (access to household money). Without interaction term between parenthood and education

	Involvement in decision-making			Access to household money			Freedom of movement		
	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia
Parenthood ^a	0.020 (0.019)	-0.018 (0.022)	0.061 (0.045)	0.138 ⁺ (0.082)	0.533*** (0.134)	0.487* (0.204)	0.146* (0.063)	0.128 (0.164)	0.013 (0.148)
Education ^b									
Secondary	0.070*** (0.013)	0.072*** (0.019)	0.041 (0.044)	0.089 (0.057)	0.255* (0.104)	0.251 (0.219)	0.007 (0.040)	0.248 (0.133)	0.033 (0.148)
Post-secondary	0.098*** (0.017)	0.083*** (0.017)	0.087* (0.044)	0.231** (0.078)	0.331*** (0.088)	0.058 (0.219)	-0.006 (0.054)	0.114 (0.122)	0.207 (0.148)
Age	0.024*** (0.006)	0.014 ⁺ (0.007)	0.016 (0.015)	0.062* (0.027)	0.050 (0.040)	0.083 (0.071)	0.064*** (0.019)	0.189*** (0.053)	0.039 (0.053)
Age squared/100	-0.028** (0.009)	-0.018 ⁺ (0.011)	-0.022 (0.021)	-0.065 (0.040)	-0.042 (0.057)	-0.115 (0.097)	-0.071* (0.028)	-0.211** (0.075)	-0.036 (0.072)
Ever worked ^c	0.060*** (0.013)	0.047* (0.019)	0.041 (0.025)	0.530*** (0.058)	0.945*** (0.095)	0.622*** (0.119)	0.230*** (0.038)	0.337* (0.136)	0.102 (0.086)
Age at first marriage	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.011 (0.008)	-0.007 (0.009)	0.004 (0.011)	-0.007 (0.005)	-0.013 (0.011)	-0.004 (0.008)
Husband related by blood ^d	-0.027* (0.013)	-0.005 (0.015)	-0.053 ⁺ (0.029)	-0.165** (0.054)	0.244** (0.077)	-0.124 (0.134)	-0.038 (0.039)	-0.112 (0.105)	-0.037 (0.103)
Region (Egypt/Jordan/Tunisia) ^e									
Upper Egypt/North/North West	-0.190*** (0.012)	-0.008 (0.015)	0.076* (0.037)	-0.547*** (0.051)	0.312*** (0.078)	-0.027 (0.176)	-0.171*** (0.037)	-0.366*** (0.102)	-0.520*** (0.122)
-/South/Centre East	-	-0.005 (0.020)	-0.132*** (0.036)	-	0.312** (0.102)	-0.468** (0.163)	-	-0.948*** (0.153)	-0.641*** (0.115)
-/-Centre West	-	-	0.106** (0.036)	-	-	-0.533** (0.170)	-	-	-0.962*** (0.133)

Table 4 (continued)

	Involvement in decision-making				Access to household money			Freedom of movement		
	Egypt	Jordan	Tunisia		Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia
-/-/South East	-	-	- 0.076 ⁺ (0.044)		-	-	1.550*** (0.215)	-	-	- 0.426** (0.140)
-/-/South West	-	-	0.048 (0.063)		-	-	- 0.660* (0.299)	-	-	- 2.396*** (0.434)
Urban ^f	0.071*** (0.012)	0.029 ⁺ (0.016)	0.107*** (0.026)		0.296*** (0.052)	0.053 (0.082)	0.654*** (0.125)	- 0.029 (0.036)	0.088 (0.110)	0.242*** (0.087)
Observations	7,622	4,550	1,480		7,622	4,550	1,480	7,622	4,550	1,480
Cragg-Uhler (Nagelkerke)-R ²	0.083	0.016	0.055		0.078	0.083	0.128	0.024	0.036	0.098

Integrated Labor Market Panel Surveys (Egypt 2012, Jordan 2016, Tunisia 2014)

Standard errors in parentheses

Reference categories: ^aNo children, ^bNo more than basic education, ^cNever worked, ^dHusband is not related by blood, ^eLower Egypt/Middle/North, ^fRural* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ ⁺ $p < 0.1$

Table 5 Coefficient estimates from multivariate negative binomial regression models (involvement in decision-making and freedom of movement) and from multivariate logistic regression models (access to household money). With interaction term between parenthood and education

	Involvement in decision-making			Access to household money			Freedom of movement		
	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia
Parenthood ^a	0.071* (0.033)	-0.026 (0.029)	0.053 (0.049)	0.228+ (0.130)	0.673*** (0.196)	0.459* (0.223)	0.111 (0.101)	0.189 (0.219)	-0.029 (0.162)
Education ^b									
Secondary	0.119** (0.041)	0.068 (0.063)	0.060 (0.140)	0.089 (0.164)	0.475 (0.387)	-0.058 (0.650)	-0.215 (0.135)	0.350 (0.455)	0.146 (0.469)
Post-secondary	0.187*** (0.044)	0.064 (0.045)	0.016 (0.127)	0.543*** (0.191)	0.584* (0.272)	0.067 (0.594)	0.135 (0.139)	0.240 (0.334)	-0.285 (0.462)
Parenthood*Education									
Parenthood*Secondary	-0.054 (0.043)	0.005 (0.066)	-0.020 (0.147)	0.000 (0.174)	-0.237 (0.400)	0.348 (0.688)	0.242+ (0.140)	-0.112 (0.474)	-0.124 (0.494)
Parenthood*Post-Secondary	-0.102* (0.046)	0.022 (0.047)	0.081 (0.134)	-0.367+ (0.202)	-0.277 (0.282)	-0.011 (0.633)	-0.167 (0.146)	-0.140 (0.349)	0.546 (0.484)
Age	0.023*** (0.006)	0.014+ (0.007)	0.017 (0.015)	0.059* (0.027)	0.049 (0.040)	0.080 (0.071)	0.061** (0.019)	0.189*** (0.053)	0.040 (0.053)
Age squared/100	-0.027** (0.009)	-0.018+ (0.011)	-0.023 (0.021)	-0.060 (0.040)	-0.041 (0.057)	-0.112 (0.097)	-0.067* (0.028)	-0.211** (0.075)	-0.037 (0.072)
Ever worked ^c	0.059*** (0.013)	0.047* (0.019)	0.041 (0.025)	0.531*** (0.058)	0.944*** (0.095)	0.620*** (0.119)	0.231*** (0.038)	0.334* (0.136)	0.099 (0.086)
Age at first marriage	-0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.010 (0.008)	-0.007 (0.009)	0.004 (0.011)	-0.007 (0.005)	-0.013 (0.011)	-0.004 (0.008)
Husband related by blood ^d	-0.028* (0.013)	-0.005 (0.015)	-0.052+ (0.029)	-0.166** (0.054)	0.244** (0.077)	-0.124 (0.134)	-0.039 (0.039)	-0.112 (0.105)	-0.036 (0.103)

Table 5 (continued)

Region (Egypt/Jordan/Tunisia) ^e	Involvement in decision-making		Access to household money		Freedom of movement	
	Egypt	Jordan	Tunisia	Egypt	Jordan	Tunisia
Upper Egypt/North/North West	-0.190*** (0.012)	-0.008 (0.015)	0.076* (0.037)	-0.546*** (0.051)	0.312*** (0.078)	-0.025 (0.176)
-/South/Centre East	-	-0.005 (0.020)	-0.132*** (0.036)	-	0.310** (0.102)	-0.466** (0.163)
-/-/Centre West	-	-	0.106** (0.036)	-	-	-0.533** (0.170)
-/-/South East	-	-	-0.076+ (0.044)	-	-	1.548*** (0.215)
-/-/South West	-	-	0.046 (0.063)	-	-	-0.657* (0.299)
Urban ^f	0.071*** (0.012)	0.029+ (0.016)	0.107*** (0.026)	0.295*** (0.052)	0.053 (0.082)	0.652*** (0.125)
Observations	7,622	4,550	1,480	7,622	4,550	1,480
Cragg-Uhler (Nagelkerke)-R ²	0.084	0.016	0.055	0.078	0.083	0.128

Integrated Labor Market Panel Surveys (Egypt 2012, Jordan 2016, Tunisia 2014)

Reference categories: ^aNo children, ^bNo more than basic education, ^cNever worked, ^dLower Egypt/Middle/North, ^eRural

Standard errors in parentheses

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ + $p < 0.1$

Table 6 Egypt: Logistic regression models, average marginal effects

	(1) Decision large purchases	(2) Decision daily need purchases	(3) Decision visits	(4) Decision food cooked each day	(5) Decision medical treatment	(6) Decision buying clothes	(7) Access to household money	(8) Mobility to the market	(9) Mobility to the doctor	(10) Mobility to relatives and friends
Parenthood ^a	0.010 (0.019)	0.040* (0.017)	- 0.010 (0.017)	0.018 (0.014)	0.017 (0.017)	0.009 (0.016)	0.032+ (0.019)	0.042* (0.019)	0.054*** (0.014)	- 0.004 (0.016)
Education ^b										
Secondary	0.075*** (0.013)	0.028* (0.011)	0.042*** (0.012)	0.035*** (0.010)	0.044*** (0.011)	0.059*** (0.011)	0.021 (0.013)	- 0.004 (0.013)	0.003 (0.010)	0.008 (0.011)
Post-secondary	0.105*** (0.018)	0.032* (0.016)	0.097*** (0.016)	0.048*** (0.013)	0.062*** (0.015)	0.091*** (0.014)	0.053** (0.018)	0.012 (0.017)	- 0.009 (0.013)	- 0.011 (0.014)
Age	0.010 (0.006)	0.016*** (0.005)	0.026*** (0.005)	0.015** (0.005)	0.007 (0.005)	0.008 (0.005)	0.014* (0.006)	0.020*** (0.006)	0.014** (0.005)	0.007 (0.005)
Age squared/100	- 0.010 (0.009)	- 0.019* (0.008)	- 0.033*** (0.008)	- 0.016* (0.007)	- 0.005 (0.008)	- 0.008 (0.007)	- 0.015 (0.009)	- 0.024** (0.009)	- 0.015* (0.007)	- 0.005 (0.007)
Ever worked ^c	0.079*** (0.013)	0.094*** (0.011)	0.010 (0.012)	0.036*** (0.010)	0.023* (0.011)	0.045*** (0.011)	0.120*** (0.013)	0.088*** (0.013)	0.048*** (0.010)	0.033** (0.011)
Age at first marriage	0.001 (0.002)	- 0.001 (0.002)	- 0.003+ (0.002)	- 0.001 (0.001)	0.001 (0.002)	0.000 (0.001)	- 0.003 (0.002)	- 0.003* (0.002)	- 0.001 (0.001)	- 0.001 (0.001)
Husband related by blood ^d	- 0.025* (0.012)	- 0.022* (0.011)	- 0.019+ (0.011)	- 0.020* (0.009)	- 0.009 (0.011)	- 0.013 (0.010)	- 0.038*** (0.012)	- 0.018 (0.012)	0.008 (0.010)	- 0.015 (0.010)
Region ^e										
Upper Egypt	- 0.183*** (0.012)	- 0.201*** (0.011)	- 0.101*** (0.011)	- 0.108*** (0.009)	- 0.103*** (0.011)	- 0.098*** (0.010)	- 0.128*** (0.012)	- 0.102*** (0.011)	- 0.002 (0.009)	- 0.012 (0.009)
Urban ^f	0.068*** (0.012)	0.044*** (0.010)	0.062*** (0.011)	0.048*** (0.009)	0.048*** (0.010)	0.046*** (0.010)	0.068*** (0.012)	0.010 (0.012)	- 0.011 (0.009)	- 0.015 (0.009)

Table 6 (continued)

	(1) Decision large purchases	(2) Decision daily need purchases	(3) Decision visits	(4) Decision food cooked each day	(5) Decision medical treatment	(6) Decision buying clothes	(7) Access to household money	(8) Mobility to the market	(9) Mobility to the doctor	(10) Mobility to relatives and friends
Observations	7,622	7,622	7,622	7,622	7,622	7,622	7,622	7,622	7,622	7,622
Cragg-Uhler (Nagelkerke)- R^2	0.101	0.134	0.058	0.090	0.055	0.072	0.078	0.044	0.027	0.012

Integrated Labor Market Panel Surveys (Egypt 2012, Jordan 2016, Tunisia 2014)

Reference categories: ^aNo children, ^bNo more than basic education, ^cNever worked, ^dHusband is not related by blood, ^eLower Egypt, ^fRural

Standard errors in parentheses

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ + $p < 0.1$

Table 7 Jordan: Logistic regression models, average marginal effects

	(1) Decision large purchases	(2) Decision daily need purchases	(3) Decision visits	(4) Decision food cooked each day	(5) Decision medical treatment	(6) Decision buying clothes	(7) Access to household money	(8) Mobility to the market	(9) Mobility to the doctor	(10) Mobility to relatives and friends
Parenthood ^a	- 0.029 (0.019)	- 0.053* (0.022)	- 0.021 (0.015)	0.020 (0.015)	- 0.003 (0.014)	- 0.002 (0.012)	0.088*** (0.020)	0.008 (0.015)	0.015 (0.014)	0.011 (0.015)
Education ^b										
Secondary	0.091*** (0.017)	0.047* (0.020)	0.067*** (0.013)	0.050*** (0.012)	0.053*** (0.012)	0.043*** (0.010)	0.047* (0.020)	0.044** (0.014)	0.028* (0.014)	0.011 (0.014)
Post-secondary	0.074*** (0.015)	0.081*** (0.017)	0.075*** (0.012)	0.064*** (0.010)	0.071*** (0.010)	0.056*** (0.009)	0.061*** (0.017)	0.019+ (0.011)	0.008 (0.011)	0.001 (0.012)
Age	0.015* (0.006)	0.016* (0.007)	0.012* (0.005)	0.008+ (0.004)	0.009* (0.004)	0.002 (0.004)	0.009 (0.007)	0.017** (0.005)	0.017** (0.005)	0.016** (0.005)
Age squared/100	- 0.017+ (0.009)	- 0.018+ (0.011)	- 0.017* (0.007)	- 0.010 (0.007)	- 0.012* (0.006)	- 0.004 (0.006)	- 0.008 (0.010)	- 0.019** (0.007)	- 0.019** (0.007)	- 0.017* (0.007)
Ever worked ^c	0.088*** (0.016)	0.084*** (0.020)	0.041** (0.014)	0.026* (0.013)	0.024+ (0.013)	0.037*** (0.010)	0.199*** (0.022)	0.026+ (0.014)	0.038** (0.015)	0.031* (0.015)
Age at first marriage	- 0.001 (0.001)	- 0.001 (0.002)	- 0.001 (0.001)	- 0.001 (0.001)	- 0.001 (0.001)	0.000 (0.001)	- 0.001 (0.002)	- 0.001 (0.001)	- 0.002 (0.001)	- 0.001 (0.001)
Husband related by blood ^d	- 0.013 (0.014)	- 0.027+ (0.015)	- 0.012 (0.011)	0.010 (0.009)	0.009 (0.009)	0.008 (0.008)	0.045** (0.015)	- 0.006 (0.010)	- 0.007 (0.010)	- 0.015 (0.010)
Region ^e										
North	- 0.019 (0.013)	- 0.076*** (0.015)	- 0.019+ (0.011)	0.027** (0.009)	0.011 (0.010)	0.032*** (0.008)	0.057*** (0.014)	- 0.033** (0.010)	- 0.045*** (0.010)	- 0.022* (0.010)
South	- 0.073*** (0.019)	- 0.031 (0.020)	0.028* (0.013)	- 0.028+ (0.015)	0.029* (0.012)	0.037*** (0.011)	0.057** (0.019)	- 0.079*** (0.011)	- 0.073*** (0.011)	- 0.071*** (0.011)

Table 7 (continued)

	(1) Decision large purchases	(2) Decision daily need purchases	(3) Decision visits	(4) Decision food cooked each day	(5) Decision medical treatment	(6) Decision buying clothes	(7) Access to household money	(8) Mobility to the market	(9) Mobility to the doctor	(10) Mobility to relatives and friends
Urban ^f	0.026 ⁺ (0.014)	0.020 (0.016)	0.036 ^{**} (0.012)	0.016 (0.010)	0.029 ^{**} (0.010)	0.013 (0.009)	0.010 (0.015)	0.010 (0.010)	0.018 ⁺ (0.010)	- 0.004 (0.011)
Observations	4,550	4,550	4,550	4,550	4,550	4,550	4,550	4,550	4,550	4,550
Cragg-Uhler (Nagelkerke)-R ²	0.046	0.038	0.049	0.045	0.049	0.055	0.083	0.059	0.057	0.046

Integrated Labor Market Panel Surveys (Egypt 2012, Jordan 2016, Tunisia 2014)

Reference categories: ^aNo children, ^bNo more than basic education, ^cNever worked, ^dHusband is not related by blood, ^eMiddle, ^fRural

Standard errors in parentheses

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ ⁺ $p < 0.1$

Table 8 Tunisia: Logistic regression models, average marginal effects

	(1) Decision large purchases	(2) Decision daily need purchases	(3) Decision visits	(4) Decision food cooked each day	(5) Decision medical treatment	(6) Decision buying clothes	(7) Access to household money	(8) Mobility to the market	(9) Mobility to the doctor	(10) Mobility to relatives and friends
Parenthood ^a	0.047 (0.042)	0.088 ⁺ (0.047)	0.021 (0.030)	0.080* (0.034)	0.016 (0.026)	0.023 (0.029)	0.110* (0.045)	- 0.019 (0.042)	0.019 (0.040)	0.014 (0.041)
Education ^b										
Secondary	0.175*** (0.035)	0.040 (0.049)	0.009 (0.031)	- 0.011 (0.031)	0.021 (0.026)	0.050* (0.023)	0.056 (0.049)	0.028 (0.041)	0.041 (0.042)	- 0.039 (0.039)
Post-secondary	0.134*** (0.037)	0.047 (0.048)	0.064** (0.023)	0.050* (0.023)	0.074*** (0.015)	0.065*** (0.019)	0.013 (0.049)	0.031 (0.044)	0.121* (0.047)	0.033 (0.045)
Age	0.010 (0.014)	0.033* (0.016)	0.013 (0.010)	0.005 (0.009)	0.005 (0.008)	0.003 (0.009)	0.019 (0.016)	0.032* (0.015)	0.011 (0.015)	- 0.010 (0.014)
Age squared/100	- 0.014 (0.019)	- 0.047* (0.021)	- 0.018 (0.013)	- 0.006 (0.013)	- 0.007 (0.012)	- 0.005 (0.012)	- 0.026 (0.022)	- 0.041* (0.020)	- 0.009 (0.020)	0.019 (0.019)
Ever worked ^c	0.090*** (0.023)	0.042 (0.026)	0.004 (0.017)	0.027 ⁺ (0.016)	0.015 (0.015)	0.024 (0.015)	0.141*** (0.027)	0.018 (0.024)	0.017 (0.024)	0.051* (0.024)
Age at first marriage	- 0.000 (0.002)	- 0.001 (0.003)	- 0.001 (0.002)	- 0.001 (0.001)	- 0.001 (0.001)	- 0.000 (0.001)	0.001 (0.003)	- 0.001 (0.002)	- 0.003 (0.002)	- 0.001 (0.002)
Husband related by blood ^d	- 0.022 (0.027)	- 0.032 (0.030)	- 0.032 (0.021)	- 0.049* (0.021)	- 0.036* (0.018)	- 0.033 ⁺ (0.018)	- 0.028 (0.031)	- 0.001 (0.028)	- 0.019 (0.027)	- 0.021 (0.027)
Region ^e										
North West	0.030 (0.033)	0.014 (0.039)	0.113*** (0.023)	0.125*** (0.020)	0.067*** (0.019)	0.006 (0.020)	- 0.006 (0.039)	- 0.254*** (0.038)	- 0.140*** (0.038)	- 0.074* (0.037)
Center East	- 0.144*** (0.035)	- 0.092* (0.037)	- 0.046 (0.031)	- 0.082** (0.031)	- 0.096*** (0.029)	- 0.141*** (0.028)	- 0.108*** (0.038)	- 0.265*** (0.035)	- 0.175*** (0.035)	- 0.127*** (0.032)

Table 8 (continued)

	(1) Decision large purchases	(2) Decision daily need purchases	(3) Decision visits	(4) Decision food cooked each day	(5) Decision medical treatment	(6) Decision buying clothes	(7) Access to household money	(8) Mobility to the market	(9) Mobility to the doctor	(10) Mobility to relatives and friends
Center West	0.071* (0.030)	0.036 (0.037)	0.124*** (0.021)	0.111*** (0.021)	0.079*** (0.017)	0.035* (0.017)	- 0.123** (0.039)	- 0.330*** (0.034)	- 0.248*** (0.034)	- 0.140*** (0.034)
South East	- 0.374*** (0.044)	- 0.103* (0.047)	0.005 (0.037)	0.042 (0.031)	0.020 (0.028)	0.024 (0.022)	- 0.345*** (0.042)	- 0.288*** (0.039)	- 0.222*** (0.039)	0.116* (0.047)
South West	- 0.007 (0.063)	- 0.019 (0.070)	0.090* (0.040)	0.061 (0.042)	-	-	- 0.153* (0.070)	-	- 0.362*** (0.034)	- 0.237*** (0.043)
Urban ^f	0.127*** (0.023)	0.175*** (0.027)	0.062*** (0.017)	0.048** (0.017)	0.044** (0.015)	0.049** (0.015)	0.149*** (0.028)	0.113*** (0.025)	0.040 (0.024)	0.027 (0.025)
Observations	1,480	1,480	1,480	1,480	1,426	1,426	1,480	1,426	1,480	1,480
Cragg-Uhler (Nagelkerke)- R ²	0.170	0.072	0.120	0.171	0.166	0.156	0.128	0.182	0.116	0.076

Integrated Labor Market Panel Surveys (Egypt 2012, Jordan 2016, Tunisia 2014)

Reference categories: ^aNo children, ^bNo more than basic education, ^cNever worked, ^dHusband is not related by blood, ^eNorth, ^fRural

Standard errors in parentheses

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ † $p < 0.1$

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