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Food for Thought: A Comparative Analysis of Eating Behavior in the United States, Poland, and Armenia

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Abstract

Despite having important consequences for individual health and well-being, daily eating habits are likely to be taken for granted. A comparative perspective helps illustrate eating behaviors specific to a given society. This paper presents an analysis, using nationally representative data, of eating patterns in Armenia, Poland and the United States. There are significant differences between countries in how much time is spent on eating and in the circumstances in which people eat. These differences cannot be explained by labor market or household characteristics. Finally, while countries differ on most analyzed dimensions, in all societies social eating is linked with higher time expenditures.

Keywords: eating patterns, food consumption, meal, time-use, Poland, Armenia, United States

Introduction

Each culture features a complex network of relations between the private and the public, biological and social, technology and tradition, or labor market and the family. These dynamics affect nearly all human activities, from sleeping patterns to voting behaviors. Many of these actions have tangible, yet often unintended, consequences. Behaviors that are common in a society eventually become what Schutz and Luckmann (1989) described as the "taken for granted" world of everyday lives. Such behaviors are, at the same time, deeply embedded in the past experiences of a nation, and reproduced in the daily lives

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of its inhabitants. Daily, "taken for granted" practices are rarely reflected upon, but what might bring such reflection is putting these practices into a broader perspective. This can be achieved by comparative analysis. It can point to the behaviors that are specific to a given country, and distinguish them from those that are exhibited in other societies. Such analysis can also link human actions to the traditions and socio-cultural contexts specific to their countries.

The objective of this article is to compare daily eating patterns in three distinctive societies: the United States; Poland; and Armenia. I draw a link between cultural and social conditions that shape everyday lives on the one hand, and, on the other hand, individual eating patterns in each country. For example, the amount of time one spends on food consumption is a choice influenced by, among other factors, economic context, individual family situation, and cultural values, such as the symbolism of food or the importance of sharing a meal. I analyze how much time people spend eating, how often they eat, as well as where and with whom they have their meals. All of these parameters have been linked with important health and well-being outcomes (French, Story, and Jeffery 2001; Hamermesh 2010). Because time is a precious resource, and even more so in busy modern lives, I also examine, in each of these three nations, the types of meals to which individuals dedicate most of their time.

The sample used for this study reflects a broader range of food cultures than do previous comparative studies using time-use data (Warde et al. 2005). In addition, eating patterns in Armenia and Poland have not been analyzed previously, which offers a new perspective on the frequently used US data.

Armenia represents a conservative post-Soviet society that maintains traditional gender roles (Avakian 2010) and an approach to food that is imbued with symbolism and emotion (Fertaly 2012). In the United States, in contrast, eating is viewed more strongly in terms of its functional aspects (Rozin et al. 2006; Veit 2013, Mudry, 2006), yet, traditionally, it is the abundance of food, rather than its quality, that is emphasized (Levenstein 1993). Poland, finally, shares some food-related behaviors with developed Western Europe (Babicz-Zielinska 1999; Johansson, Wikman, and Hallmans 1994), while still having strong links with Eastern European traditions (Sinnreich 2007).

Analyzing distinctive countries such as these three allows one to identify areas of convergence between different models of eating. And, while food consumption patterns are likely to vary within nations (Miele and Murdoch 2003), focusing on the aggregate characteristics of the national sample allows for macro-level cross-cultural comparisons.

The structure of this paper is as follows: I first explain how the particular social and cultural context in each of these three nations might have shaped attitudes towards food and food-related behaviors. Next, I describe the data and behavioral indicators used in this study, and why they matter for individual health and well-being. The results are then presented in a manner permitting comparison between nations for each of the indicators. The paper concludes with a discussion of the social context and role of food in each country.

Theoretical Framework

Food consumption is affected by multiple macro-level factors, varying from cultural symbolism and rituals (Bugge and Almas 2006; Kniazeva and Venkatesh 2007), to gender equality and labor market regulations (Dixon et al. 2014; Warde 1999). On the individual level, eating is regulated by social norms and social modeling (Nisbett and Storms 1974, Herman and Polivy 2005), including the presence of other people during the meal (Hetherington et al. 2006).

Important cross-cultural commonalities include the meaning of sharing food with others. In many societies, the family meal is a valued cultural norm (Figart and Golden 2013) and food consumption is seen as an essential bonding activity (Anvig and Sellerberg 2010). Across cultures, eating is also generally considered enjoyable (Rozin 2005), and after the meal people tend to be in a better mood than before (Hetherington et al. 2006). Eating can therefore be linked with feelings of belonging, connectedness and psychological wellbeing.

Analyzed countries

Knowing the social, economic and cultural context of food consumption allows one to better understand the role of eating in daily lives. It may be difficult for individuals to eat together and have fixed-time meals at home while having a de-synchronized family life and de-routinized schedule (Warde 1999; Dixon et al. 2014). In modern societies, in which time is a "scarce good," food might assume a secondary role, and a traditional meal may be replaced by, for example, a snack eaten in front of a TV or computer. Societies that seem especially susceptible to such changes are those in which lives are busy and food is seen as "fuel", as opposed to "pleasure" (Kemmer, Anderson, and Marshall 1998; Miele and Murdoch 2003; Kniazeva and Venkatesh 2007). The prime example of a country where the "fuel" aspects of food have been strongly emphasized is the United States. In *Measured Meals: Nutrition in America* Mudry (2009) describes government efforts to curb pleasure-driven, "non-economical" eating, which date back to the beginning of the twentieth century. The main tool in this fight was the food guides published by the United States Department of Agriculture (USDA). The US federal food guidance was intended to promote "healthful" and "economical" eating among Americans (and, especially, immigrants). The guides instructed readers to watch their daily food intake and calculate its nutritional value against economic costs (Veit 2013; Mudry 2009). From this perspective, food is viewed not in terms of taste and symbolism, but rather in terms of units, calories, and nutritional content. This new rhetoric was reinforced by its being linked with morality and traditional Protestant values—hard work and frugal life (Mudry 2006). Being a good American meant buying food that was simple, inexpensive, and provided necessary nutritional benefits.

This way of thinking appears to be reflected in the results of comparative research on food attitudes. Americans are most likely to associate food with health rather than pleasure (Rozin et al. 1999). Moreover, even though Americans stand out among their counterparts in other countries as the biggest

consumers of reduced fat or reduced sodium products, they still consider themselves the least healthy eaters. Food in the United States is also most likely to be associated with anxiety (Rozin et al. 1999). It seems that these attitudes may also be reflected in American eating patterns. Longitudinal (1975–2000) time-use analysis including the United States and four developed West European countries shows that Americans consistently reported the least time spent eating, and the least devoted to preparation of meals at home. At the same time, the proportion of meals eaten outside of the home in the United States was the highest (Warde et al. 2007). Americans also often admit to using pre-prepared foods for at-home consumption (Bava, Jaeger, and Park 2008). The relatively large share of females in the US workforce, as well as the work culture, have certainly contributed to the popularity of pre-prepared food and eating out, both of which allow individuals to "save" precious time (Warde 1999; Miele 2001). Specific work arrangements and time shortages were shown to be linked with allocating less time to food preparation and eating, thus affecting the frequency of family meals (Dixon et al. 2014; Senia, Jensen, and Zhylyevskyy 2014) as well as BMI values (Kalenkoski and Hamrick 2013). Similar links, however, were also reported in other countries (for example: Antunes et al. 2010; Di Lorenzo et al. 2003; Dixon et al. 2014).

While important, labor market conditions alone cannot explain these food-related behaviors in the United States. It seems that what also plays a significant role is the fact that Americans find it difficult to fully enjoy food, and the nation's relationship with eating has been haunted by a preoccupation with health and, more recently, appearance (Levenstein 1993; Sobal and Maurer 1999). All of this has served to place food in a specific—and not necessarily positive—context.

Very different attitudes towards food have shaped culinary habits in Armenia. This post-Soviet republic boasts a very long culinary tradition that is still reflected in the way food is handled and prepared today (Fertaly 2012). It is an example of a culture in which food consumption is a not about getting the "fuel" but rather celebrating the "meal," which, in this case, is a bonding ritual in which food matters as much as its preparation and social context. For Armenians, sharing food is an act of great social and cultural importance (Avakian 1997).

Food in Armenia is seen as coming from nature and formed by human (mostly female) hands (Petrosian and Underwood 2006). Certain foods are still prepared in the way practiced for centuries, even though it is, in many cases, a labor-intensive and time-consuming process (Fertaly 2012). Following ancient recipes, however, has a special, almost spiritual meaning in Armenia. Cultivating culinary traditions has served as an important means to preserve national identity throughout the turbulent history of the nation (Cooke 2000). Traditional dishes help establish connectedness with the nation's ancient past. An example of such symbolism is eating Armenian *khash* with *lavash*, a traditional flat bread (instead of using a more convenient spoon), which symbolizes that the dish originated in a time when no utensils were used (Fertaly 2012). Food

preparation and sharing the meal also has strong moral and emotional associations. Armenian women feel that through food they show their love and care for family members (Avakian 2005), as well as contribute to strengthening the nation and prove their own resourcefulness (Fertaly 2012). Resourcefulness with regard to food provisions is a common motive in the post-socialist region, including Poland, where, due to economic shortages under socialism, food was rationed and very limited in terms of variety (Fertaly 2012: Burrell 2003). In the case of Armenia, cooking traditional food was also a sign of quiet resistance towards unification during Soviet times, and food was a vehicle for transmission of respected norms and the preservation of national identity (Toomre 1997).

Traditional homemade food prepared by loving hands, however, does not necessarily represent healthy food in terms of its caloric content or nutritional value. In fact, it may be just the opposite. *Khash* is high in saturated fat, and *lavash* is made of white flour; neither is likely to meet the USDA's recommendations regarding the nutritional content of food. As noted in Fertaly's (2012) description of traditional Armenian cooking, Armenians in general seem to use animal fat (butter, oil or lard) much more frequently than Americans. It is often the case, however, that objective medical knowledge and individual normative perception are diverging, and so the norms regulating physical and social health might not always be compatible (Hauck-Lawson 1998). This seems especially likely in the case of food consumption.

Some level of convergence between functional and traditional or emotional attitudes towards food can be observed in the third country included in this study, Poland. Poland is a Central-Eastern European country that went through a phase of successful systemic transition following the collapse of socialism in 1989. Working hours of the typical Polish worker are among the longest in the European Union, while the duration of eating falls within the middle of the distribution of mean values for European countries (HETUS 2005-2007). Poland, however, still shows marks of its Eastern European heritage. In Polish tradition, there is a strong link between food consumption and socializing. Historically, Polish meals were long and the food abundant (Żyromski 2003). Offering more food than one can eat is still a common denominator for what is considered hospitality in Eastern Europe, and non-compliance with this norm is seen as sign of animosity (Peto 2007). Restrictions on eating in Poland were mostly of a religious nature—in medieval times, for example, fasting was introduced by the Catholic Church. Later, due in part to the spread of Protestantism, a more frugal approach to consumption was advised in some parts of the country, and new laws were passed to regulate it (Żyromski 2003). Socialist Poland and its continuous food shortages presented a challenge to this kind of lifestyle. Perhaps not surprisingly, it was mainly rising food prices that triggered riots and social unrest, including mass protests during the 1980s. Poles' preoccupation with acquiring food was reflected in the fact that they were almost always ready to join a queue to buy it (Burrell 2003). People used their social networks and informal exchanges to complement inefficient state supplies and purchase food directly from farmers. After the systemic post-socialist change, such means to

obtain food were no longer needed, but personal relations with food sellers still remain important to people, as they are seen as ensuring product quality—yet another phenomenon common in Eastern Europe (Sinnreich 2007).

In terms of food choices, both sensory and functional factors play a role for Poles (Wądołowska, Babicz-Zielińska and Czarnocińska 2008). They pay attention to freshness, taste, occasion, and, to a lesser extent, health (Babicz-Zielinska 1999). Fat content is an important choice criterion—the decline in the popularity of pork has been attributed to its relatively high fat content, while low-fat milk is more popular than its full-fat version, trends similar to those throughout Western Europe (Babicz-Zielinska 1999; Johansson, Wikman, and Hallmans 1994). Although Poles have been making positive changes in their diets (Wądołowska, Babicz-Zielińska, and Czarnocińska 2008), they are, unlike Americans, not willing to pay more for organically grown food (Sinnreich 2007). Similar to those of most developed countries, the modern Polish diet includes many processed foods high in fat and sugar (Szponar et al. 2003), but eating out in fast-food restaurants is still rather occasional (Szczepańska et al. 2014).

Different eating cultures are plausibly linked with different eating behaviors. Thus far, most of the cross-national analyses of eating patterns used only the data from highly developed and affluent countries, including the United States. In this body of research, eating patterns overall have been relatively similar across countries in terms of time-use behaviors, and definitely more similar than many other daily practices (Warde et al. 2005). I argue that this is the effect of country selection. Using countries representing a broader scope of possible eating behaviors and food traditions, as well as different cultural and economic trajectories,[1] might provide new insights into eating patterns in different societies, and the key dimensions of differentiation in this otherwise basic human activity.

Analyzed behaviors

This paper presents an analysis of how long, how often, where, and with whom people eat. These characteristics carry information about social attitudes and the role of food in a given society, and they matter for individual health and well-being. The context of the meal also plays a part in determining food choices (Mela 1999). People tend to eat higher fat and higher calorie foods when eating out of the home, and the portion size also tends to be larger (French, Story, and Jeffery 2001; Lin, Frazao, and Guthrie 1999). The priority order of activities plays a role too—that is, eating as a secondary activity (especially accompanying passive leisure, such as TV watching) can result in more consumption, as people are less likely to control how much they eat when distracted by other stimuli (Maras 1997). Eating with familiar others exerts a similar influence (Hetherington et al. 2006), but in terms of experience it also confers important positive emotional benefits (Temple et al. 2007). Family meals are an institution in their own right, and they are especially important for strengthening the bonds between family members, as well as for the development of

young children, including shaping their eating patterns in later life (Anvig and Sellerberg 2010; Spagnola and Fiese 2007). In the USSR family meals were traditionally seen as essential for a "proper" upbringing and, as such, they were promoted by soviet educators (Makarenko 1937; see also: Kelly 2007). The importance of such meals was emphasized also in the United States, in both the American press (Gibbs 2006) and US policy documents (Council of Economic Advisors 2000). Despite that, the frequency of family meals in America has declined substantially over the past few decades (Putnam 2015). In some cultures, however, the image of eating as an inherently social activity might be so strong that individuals make an effort to eat with others despite the apparent constraints (Callejo and Diaz-Mendez 2015). Some studies have also shown that in societies emphasizing the importance of eating with others, the prevalence of obesity is lower than in countries with high rates of solo eating (Fischler 2011; Rozin et al. 1999). Busy modern schedules might motivate people to cut down on meal times in order to "save" time for something else (Senia, Jensen, and Zhylyevskyy 2014). In this context, it is especially interesting to analyze which circumstances have an effect opposite that of time pressure, i.e., they encourage people to dedicate more time to eating. In this paper, I therefore analyze how the basic characteristics of eating occasions (when, where, and with whom people eat) relate to the duration of a meal in each of the three countries.

Data and Method

This study uses time-use data from the 2008 American Time Use Survey (ATUS), including the Eating and Health module (EH module); the 2003/2004 Polish Time Use Survey (PTUS); and the 2008 Armenian Time Use Survey (ArTUS). Each study covers a representative sample of the population aged 15 and above, and includes time-use data for each day of the week.[2]

PTUS and ArTUS follow a similar diary design based on the Harmonized European Time Use Survey (HETUS) model, in which two days (one weekday and one weekend day) are collected from each respondent. HETUS-type surveys also record two types of activities: primary (i.e. main); and secondary (i.e. accompanying the other, main activity). Activities are coded in 10-min time slots, and the diaries are kept for a 24 h cycle (which results in 144 slots for each diary day).

The design of the US survey is slightly different. ATUS collects one diary day per respondent, and keeps the record of primary activity only. An additional EH module provides information on any eating or drinking (separately from eating) occurring as a secondary activity. The question on secondary eating (and drinking) in the American Time Use Survey was prompted, which might lead to an overall higher number of reported episodes. In the case of the Polish and Armenian Time Use Surveys, secondary activities were recorded spontaneously as a sequence parallel to primary activities, and respondents were not told to focus on any specific activity. However, this specificity of the surveys might account for only a part of the differentiation in primary and secondary eating

across the three countries. Data on secondary activities accompanying primary eating for the US were not collected.

The record of activities in time is also different in ATUS, as it is based on episodes (marked by the actual beginning and ending time of each activity), not on a pre-assigned diary matrix dividing the day into slots of equal duration. There is no fixed minimum duration of a slot. ATUS covers a period longer than 24 h. However, it allows for trimming diary data to a 24 h cycle. This study used such a 24 h cycle, lasting from 4 am to 4 am the next day. This choice was made in order to assure data comparability across all countries. In all three datasets, primary eating also includes primary drinking; in this paper, primary "eating and drinking" is referred to as "primary eating," or a "meal," as opposed to secondary eating, which in this paper is also called "snacking" (as in: Hamermesh 2010).

ATUS and PTUS data cover an entire year. ArTUS was carried out during one month only (October). Because of this limitation of the study, seasonal variations in eating are not taken into account in the analysis. This study uses one diary day per respondent for the United States, one diary day per respondent for Poland (the first reported day), and two diary days per respondent in Armenia, in order to boost the relatively low sample size for this country. Since the study focuses on daily eating patterns, all national holidays were excluded from the analysis. More information on the survey data for each country, including sample size and basic characteristics, is provided in the Appendix (Table 3).

All aspects of eating patterns that are subject to this study are analyzed in a manner permitting comparison across the three countries. I provide descriptive statistics for selected characteristics of eating patterns for each country. A multivariate linear regression (OLS) model is used to test the association between the total daily duration of eating and basic socio-demographic variables. The same type of model is employed to analyze the situational context of eating as associated with the duration of a single meal.

Results

First, I examine, in each nation, the distribution across the day of basic primary activities: eating; food preparation; sleeping; and self-care. The category of "other" includes any other activity that people reported. Food preparation was added in order to reflect how much of the food is prepared by respondents themselves (though a respondent might be a member of a household in which food is prepared by someone else). All categories of activities sum up to 100 percent of daily time (24 h), and the figures show how this time is allocated in the population. The *x*-axis represents time over the day, while the *y*-axis is the percentage of people who report doing a particular activity at time *x*. For the sake of simplicity, all days are collapsed into two charts for each country, each showing the weekdays and the weekends. Figures 1a, 2a, and 3a illustrate the patterns of eating on weekdays. Figures 1b, 2b, and 3b present the same information for the weekends.

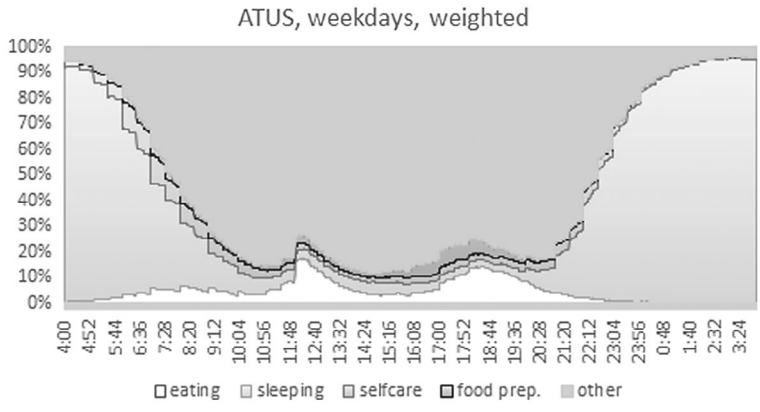

Fig 1a: ATUS, primary activity: time allocation over weekdays, weighted.

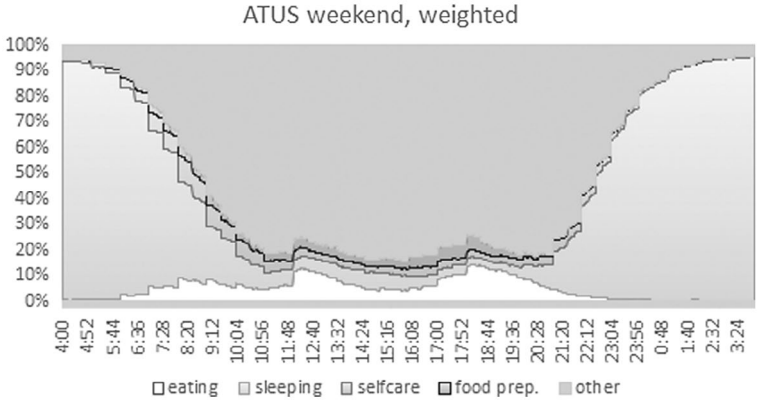

Fig 1b: ATUS, primary activity: time allocation over weekend, weighted.

All countries exhibit three major peaks of food consumption across both weekdays and weekend days, with minor differences in the time at which these peaks fall. They presumably correspond to breakfast, lunch, and dinner. The share of eating time among all activities remains relatively high over the whole waking day in Armenia, and—to a lesser extent—Poland. Peaks and valleys are less sharp in these countries, which implies that the times of the meal are not fixed or the same for everyone, i.e., meals do not have very rigid temporal settings. In the United States there is a sharp and clear peak around lunchtime, which implies that lunch has a more (temporally) specified place in the daily routines of Americans—especially on weekdays. In the United States the share

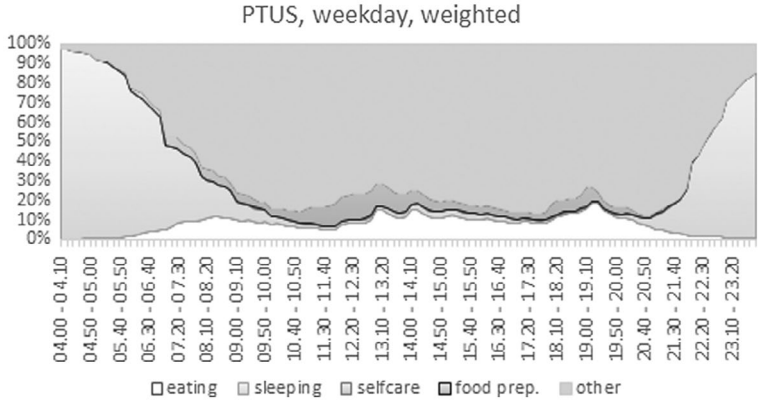

Fig 2a: PTUS, primary activity: time allocation over weekdays, weighted.

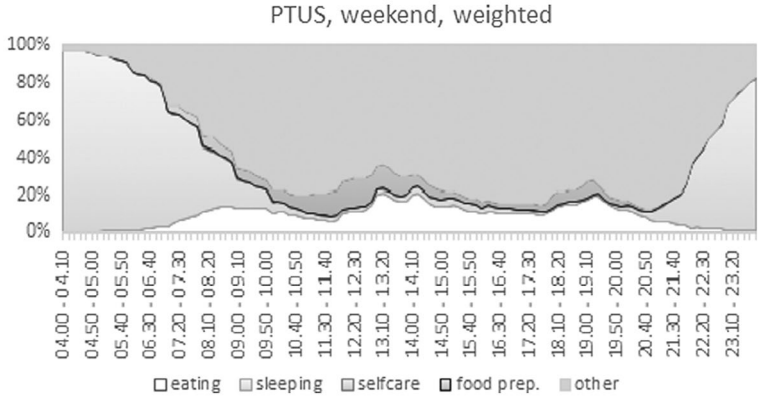

Fig 2b: PTUS, primary activity: time allocation over weekend, weighted.

of time spent eating across the day is also the lowest, compared with the two other countries.

Cross-national differences in the time spent eating become more visible when looking at the average total time spent on primary eating during the day (Figure 4). In the United States, it is significantly lower than in the other two countries, and it is around 50 percent shorter than in Armenia, where primary eating occupies the largest share of the day, on average. Differences between the means are statistically significant for all countries.

The disparities between countries might be related to differences in household composition (e.g., more single-person households in the United States),

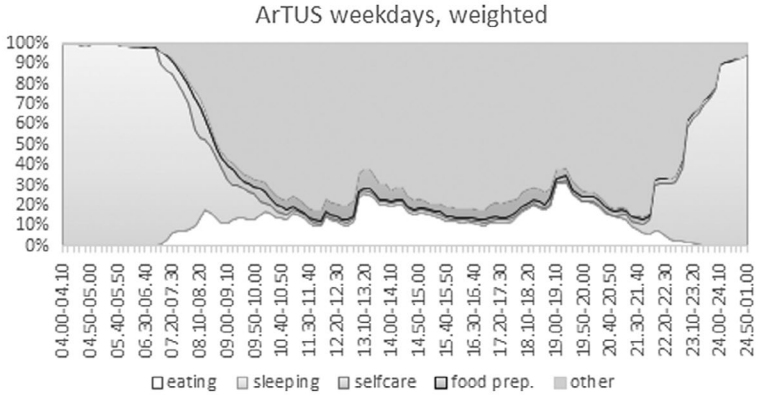

Fig 3a: ArTUS, primary activity: time allocation over weekdays, weighted.

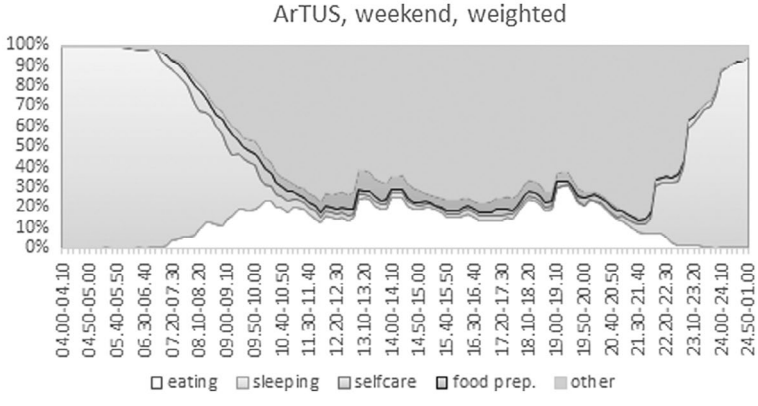

Fig 3b: ArTUS, primary activity: time allocation over weekend, weighted.

labor market structure, or income. However, even when most of these indices are controlled for[3], nation-level differences in the duration of primary eating remain significant (Table 1). Poles spend, on average, 50 min less on food consumption than Armenians, while the difference for Americans is 75 min. The country effect is the strongest out of all variables in the model.

Other findings worth noting include the fact that women, on average, spend less time eating than men (this effect is the strongest for Poland and the United States, though these results are not shown), and eating duration is longer for members of multi-person households. Labor status also matters: working people spend less time eating than those who do not work for pay. The duration of eating is also substantially longer over the weekend, when people usually face fewer time constraints.

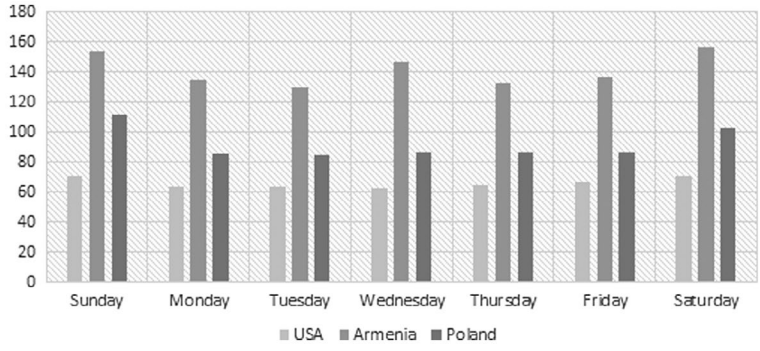

Fig 4: Mean total duration of primary eating by day of the week, weighted.

The relatively short total duration of primary eating in the United States becomes more understandable once the duration of secondary eating is taken into account (Figure 5). A substantial share of eating in the United States is done as secondary activity, which is consistent with the findings of other research (Hamermesh 2010; Senia, Jensen, and Zhylyevskyy 2014) showing that Americans tend to replace primary meals (higher time expenditure) with secondary eating. Reporting eating as an accompanying activity also implies that it is not of primary importance to the respondent in a particular time slot. Prioritizing meals over other activities (or vice versa) can therefore reflect differences in attitudes towards food in the United States, Poland or Armenia, with less value being attached to meals in America.

The total duration of primary eating over a day is a function of the number or episodes of eating and the mean duration of episodes. Less total time spent on primary eating might therefore be due to either having shorter meals, or having less of them—i.e., skipping meals. In the sample for this study, the mean duration of a single meal does not differ significantly across countries and, in fact,

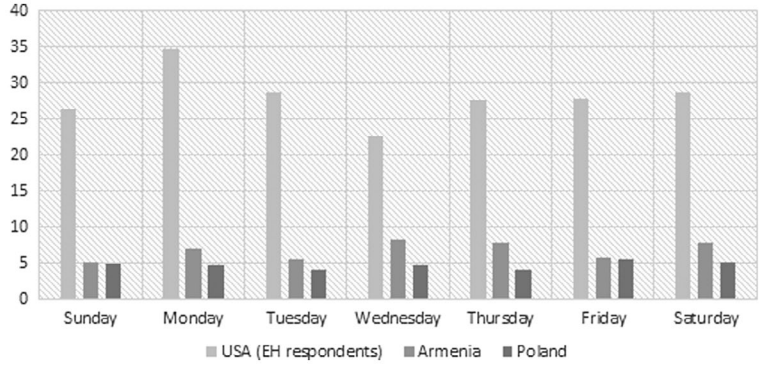

Fig 5: Mean total duration of secondary eating by day of the week, weighted.

it is shortest in Poland (26 min, on average). Americans spend, on average, around 33 min on each eating occasion (primary eating), which is around 3.5 min less than the typical Armenian respondent. The duration of meals, therefore, does not account for the variation in total primary eating duration across the three counties. It turns out that the country differences are driven only by the differences in the number of primary eating episodes per day. Analysis of the distribution of the number of episodes of primary eating in the sample shows that the United States is the outlier of the group (Figure 6).

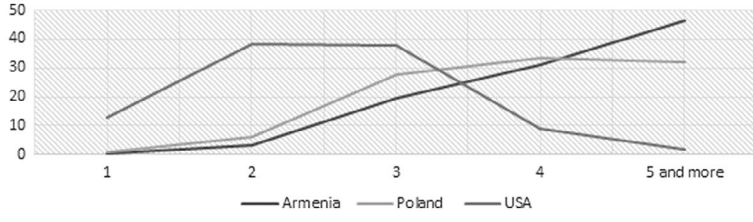

Fig 6: Distribution of the total number of episodes of primary eating per day.

Table 1. Coefficients for the covariates of the total duration of primary eating over a single day (dependent variable), OLS.

Factor	Coef.	SE
Ref. Armenia		
Poland	−49.98***	1.08
United States	−74.81***	1.12
Ref. male		
Female	−3.18***	0.57
Age	1.09***	0.09
Age squared	−0.01***	0.00
Household size (number of people)	1.72***	0.28
Ref. weekday		
Weekend day	16.46***	0.56
Ref. in labor force		
Unemployed	15.30***	1.16
Not in labor force	9.76***	0.714
Intercept	98.69***	2.49
N/ Adj R^2	32,818/0.18	

Note: Presented coefficients are not weighted. Error terms of individuals are clustered within the country. Author controlled for the basic variables that are used for drawing the sample (age, gender, labor force status).
***Significance level < 0.001.
**Significance level < 0.01.
*Significance level < 0.05.

The mean number of episodes of primary eating fluctuates around 4 per day for Armenia, 3.5 for Poland, and 2 in the United States, which means that each Americans eats, on average, two meals per day. The remainder of Americans' food is consumed as snacks (secondary eating). Skipping meals is therefore the main reason for the much lower duration of primary eating episodes in the United States.

The distinction between primary and secondary eating cannot be interpreted solely in terms of prioritizing one activity over another. The majority of episodes of primary eating in Poland and Armenia are not accompanied by any other activity (over 40 percent and 70 percent, respectively), or are accompanied by "talking with household members" (approximately 30 percent and 25 percent, respectively), which suggests that these respondents are having a family meal or social meal. Unfortunately, as mentioned earlier, data on the secondary activities accompanying primary eating are not available for the United States. Regarding secondary eating in the United States, it most frequently accompanies TV watching (20 percent of cases) and working (15 percent).

Meals can be described not only in terms of their quantity, but also quality, and this characteristic may be derived from the activity setting (i.e., social context) and the location of the meal. In these terms, most of the eating in all three countries takes place at home. However, Americans are more likely to eat out of the home, compared with Armenians or Poles (Figure 7).

As far as the social context of meals is concerned, respondents in all countries most often eat in the company of others (usually members of their households). Once again, however, Americans are relatively more likely to eat alone, as the share of solitary meals among all episodes of primary eating is the highest in the United States (Figure 8).

The final issue examined in this analysis is the relationship between meal settings and the amount of time dedicated to eating. In each country, the following activity settings are examined as the covariates of the meal duration: type of meal (breakfast, lunch, dinner, or supper[4]); location of the meal (where it happens); and social context (who else is present). I also include interactions

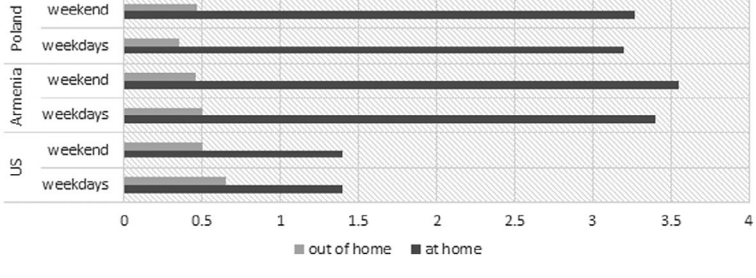

Fig 7: Mean number of primary eating episodes by location, weighted.

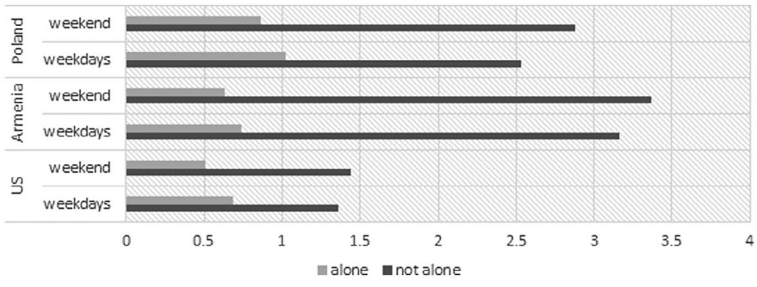

Fig 8: Mean number of primary eating episodes by social context (whether person was alone or with someone), weighted.

between the variables measuring the location of the meal and the presence of others. The model also controls for respondent's gender, age, household composition (number of people in the household), labor market status (working or not), and whether the episode of eating happens on a weekday or a weekend day. Results are summarized in Table 2.

The results of this model support previous findings concerning the importance of social context for food consumption—i.e., it has a strong positive effect in all countries. Social meals are, on average, significantly longer than solitary eating. The presence of others has the strongest effect in Poland and in the United States, but on its own it does not influence meal duration in Armenia. However, eating at someone else's house (which also implies a social occasion) or eating in one's own home with someone from outside of the household leads to substantially longer meals in all three nations, including Armenia. Americans report the longest meals when they eat in a restaurant or in the company of a person from outside of their household (for example, a friend or a co-worker)—those meals are, on average, almost 20 min longer than the reference. Poles are similar in this respect—meals consumed in a restaurant or with a friend are over 12 min longer, on average. However, meals eaten with friends and in their house are longer by a similar margin (around 11 min more). Armenians report the longest meals when they visit other people in their homes (over 23 min longer), as well as when they eat with friends at their own house (additional 13 min). Eating in a restaurant in Armenia is very rare (hence the high standard error), while it is relatively common in the United States. The United States is also the only country where the duration of a meal eaten at home is the shortest, and it is shorter even than a meal eaten "somewhere else," for example in the workplace. This may imply that, even though Americans eat most of their meals at home, they do not consider such meals worthy of much time investment.

Regarding the time of day at which meals occur, breakfast is one of the shortest out of all meals in Armenia and in the United States. However, in

Table 2. Coefficients for the covariates of duration of meal on a single meal occasion, by country, OLS.

	Armenia		Poland		USA	
Factor	Coef.	SE	Coef.	SE	Coef.	SE
Ref. somewhere else						
Own home						
Home of someone else	–0.81	1.70	3.02***	0.83	–4.93***	0.76
Restaurant etc.	23.30***	1.51	10.54***	0.52	5.42***	0.86
Ref. alone	6.03	24.27	7.66**	2.49	9.53***	1.38
With HH member						
With someone else	2.63	2.22	4.52***	1.21	8.32***	1.20
Ref. breakfast	1.93	1.78	9.26***	0.90	5.01***	0.84
Lunch						
Dinner	7.22***	0.62	4.56***	0.17	1.91***	0.40
Supper	6.86***	0.59	2.72***	0.16	5.31***	0.38
Interactions:	5.68	3.27	–3.59***	0.70	0.31	1.13
At home & HH memb.						
Restaurant & HH memb.	4.89*	2.32	–1.25	1.22	–1.14	1.25
Restaurant & not HH memb.	28.10	26.63	8.72**	3.11	11.72***	1.82
At home & not HH memb.	29.09	24.75	12.10***	2.61	19.87***	1.61
Intercept	13.26***	2.08	3.05***	0.94	5.63***	1.13
No (of episodes)/ R^2	23.59***	1.76	12.51***	0.84	19.34***	0.85
	10,947/0.08		72,785/0.10		25,356/0.17	

Note: Control variables include: working status (working/not working), single-person household (dummy), age, gender, day of the week. Coefficients are not weighted; the unit of observation is single episode in a day, not an individual.

***Significance level <0.001.

**Significance level <0.01.

*Significance level <0.05.

Poland, it is still significantly longer than supper. Poles and Armenians tend to have longer meals earlier in the day (the longest meal being lunch/*obiad*), which might be attributable in part to the tradition of eating major meals around midday (Żyromski 2003). Americans tend to have their longest meals later in the day.

Finally, it is worth mentioning that the percentage of variance explained by the model is the highest for the United States (17 percent), which suggests that in this country the variability in the duration of meals is most strongly related to the meal occasion. On the other hand, it is least strongly associated with meal settings in Armenia (8 percent of the variance explained). It seems, therefore, that Armenians not only tend to spend the longest time eating (both throughout the whole day and on a single occasion), but they also do so regardless of specific meal circumstances. Americans, on the other hand, eat least often, spend the least amount of time on primary eating (though their meals are not the shortest, since Poles spend less time eating on each occasion), and the amount of time they spend eating on a given occasion is, to the greatest extent, associated with its situational context.

Summary and Discussion

Daily eating patterns in the United States, Poland, and Armenia are similar in terms of how consumption peaks are distributed throughout the day. Three major peaks correspond to breakfast, lunch, and dinner, and are likely to reflect the universal human need for fairly regular food intake over the day.

Despite similar meal patterns on the population level, Americans spend significantly less time engaged in primary eating than Poles or Armenians. Cross-national differences in the duration of primary eating cannot be explained by differences in household composition, respondent's labor market status, or basic demographics. Although not everyone eats three meals per day in every country, the skipped meals need to be made up for by snacking (secondary eating), as, it seems, physiological needs cannot be ignored entirely. Americans are much more likely to snack than respondents from the other two countries.

Respondents' homes are the most common location for food consumption in all countries. However, Americans are less likely to eat at home than Poles or Armenians, and the meals of the former are also shorter than meals eaten in any other location.

Finally, eating in the company of others is the most common way of eating in all countries. Social meals are also the longest, especially if they take place outside of respondents' homes, such as in a restaurant (Poland, United States), or someone else's house (Armenia).

Substantial cross-country differences in a basic human activity such as eating are shaped by multiple factors, including work arrangements, economic situation or household composition. However, whether a person decides to eat a "proper" meal or have a snack instead, or whether or not a family makes an effort to eat together at home, is a daily choice that individuals make regardless of where they live. Americans, Poles, and Armenians differ in their choices.

The eating model prevalent in the United States, as described in this study, might be referred to as "functional eating," and it is likely to reflect cultural values that emphasize minimizing costs (saving time) while maximizing effect (satisfying hunger, providing nutrition). The same logic underlies the idea of getting nutritional food at a reasonable price, as advised by the USDA, or using pre-prepared products to ease the time-burden of housework. It is pragmatic and efficient, but, perhaps, this is also why Americans may not see additional incentives in having a meal over having a snack while doing something else, or in getting together with others for meals, both of which require more effort and greater time expenditure.

Such "functional eating" patterns are uncommon among Armenians, and, I argue, this is because food in their culture is not only (or maybe not at all) regarded in terms of its nutritional value or convenience of preparation. It carries strong symbolic and emotional connotations, and sharing food is an essential aspect of eating. Cooking time-consuming traditional meals in modern Armenia is not a necessity—it is a choice (though, certainly, it might be easier for Armenian women to find time for it). Interestingly, however, the longest food preparation time was not reported in Armenia, but in Poland, a country with much greater gender equality, higher female employment rates, and better access to time-saving cooking appliances.

One might conclude that the amount of time spent on food consumption and related activities depends on how the choice of time-allocation is framed. That is, if time is seen as scarce and other alternatives (be they work or leisure) are seen as important and demanding time investment, a meal is more likely to be skipped, shortened, or replaced by secondary eating. It is, however, the cultural values or personal priorities that influence the outcome of that calculation. If the pleasure of eating is important for the culinary culture of a country, or if food consumption is ascribed important symbolic meaning, people may prioritize having a meal over other activities, and, perhaps, shorten the duration of these activities in order to maintain longer meals.

Finally, an important finding of this analysis is that, regardless of the general food culture and socio-economic conditions, how much time people dedicate to eating is strongly related to meal circumstances. A question that this study does not address, though, is the extent to which longer meals are driven by the meal occasion alone, and whether that relationship is linked with personal preferences. It might be the case that people who generally enjoy eating, and for whom food occupies an important place in their daily routine, may also be more likely to participate in social meals. Individual preferences and corresponding eating habits are therefore worth investigating. Another limitation of this paper is the lack of analysis of the very important relationship between BMI values and eating patterns across countries. The reason for this shortcoming is the fact that relevant data are not available for Armenia and Poland. The diaries also do not provide information on what exactly people eat or where the food comes from, which is likely to be another dimension that varies strongly between nations. Overall, although analyzing general eating patterns on the

population level does not allow for a fine-grained examination, it does permit detecting basic disparities. And, as the results of this study demonstrate, while most people need to eat around three times a day, they can do it in very different ways.

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Notes

1. Table 1 in the Appendix presents summary data on population size for each country, economic conditions, and mean BMI values.
2. No specific questions are asked. Respondents are asked to recall all their activities throughout a given day (either on paper or during a telephone interview, which is the case in ATUS). Activities are reported spontaneously. Together with reporting the activities, respondents also report who else was present at that time and where the activity took place.

3. Income is not included in the model because data on income are not available for all countries in the sample.
4. In this study, the following meal coding is used: "breakfast" signifies any meal taking place between 5:00 and 11:00; meals reported between 11:01 and 16:00 are coded as "lunch" (in Polish "*obiad*")—that is, a midday meal; meals eaten between 16:01 and 22:00 are qualified as "dinner"; and eating between 22:01 and 4:59 —as "supper"—i.e., a late night meal. Differences between countries in the frequency of particular meal types are minor and for this reason are not presented.

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Appendix

Table 1. Population health and economic conditions (GDP) in the United States, Poland, and Armenia.

	Population in thousands (WHO 2011)	GDP PPP (World Bank 2012)	Average BMI values—over 20 y.o. (WHO 2004/2008)		Men and women who are overweight/ obese (WHO 2004)	Urban population (WHO 2011)
USA	313,085	51,749 Int$	Men (2008)	28.5	75.6 percent	82 percent
			Women (2008)	28.3	72.6 percent	
Poland	38,299	22,783 Int$	Men (2004)	26.2	50.7 percent	61 percent
			Women (2004)	25.8	44.3 percent	
Armenia	3,100	6,544 Int$	Men (2008)	25.4	53.9 percent	64 percent
			Women (2008)	27.3	52.8 percent	

Note: y.o. stands for 'years old'.

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Table 2. Sample size and methodological information.

	Sample size (days)	Share of women	Percentage of employed	Sample	Data collecting agency
ATUS	12.509, 1 day per person	44 percent	65 percent	Stratified, three-stage sample based on the CPS survey participation; for more information see: ATUS 2003–2013 User Guide, p. 11	US Census Bureau
ArTUS	2.679, 2 days per person	43 percent	52 percent	Random two-stage sampling; for more information please see: Report on Time Use Sample Survey in the Republic of Armenia, p. 6	Armenian Statistical Office
PTUS	19.905, 1 day per person	43 percent	48 percent	Random three-stage stratified sample, based on the territorial units selection (voivodeships); for more information see: Budżet czasu ludności 1 VI 2003—31 V 2004	Polish Central Statistical Office