



# Getting into the ‘Giving Habit’: The Dynamics of Volunteering in the UK

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**Abstract** Scholarship on volunteering has paid insufficient attention to how experiences of volunteering in the past affect current and future participation. The importance of this relationship is emphasized by the introduction of public policies across the globe focusing on national service programmes and community service in schools with the underlying intention of inducing ongoing pro-social behavior. Using the UK longitudinal data, this article analyzes the prevalence of persistent individual volunteering behavior over the life-course, and most importantly, the extent to which past volunteering has a causal influence on current and future participation. Strong evidence of this relationship is provided, suggesting that volunteer-stimulating policy measures—such as the UK government’s National Citizen Service initiative for all young people between 16 and 17 years of age—will have a more profound effect because they do not only affect current volunteering activities but are also likely to induce a permanent change in favor of volunteering.

**Keywords** Social policy · Voluntary work · Persistence · Warm glow · Social capital

## Introduction

In the UK, 14.2 million people formally volunteered at least once per month in 2015/2016 (National Council for Voluntary Organisations 2017). The Office of National Statistics (2017) reports that 1.9 billion hours were volunteered in 2015 with an estimated value of £22.6 billion.<sup>1</sup> Volunteers provide a vital resource to organizations (Prouteau and Wolff 2008), as well as being key contributors to community development (Bussell and Forbes 2002), with voluntary action forming a key component of citizenship and part of the neoliberal work agenda (Kelemen et al. 2017). Society is also becoming increasingly reliant on the kindness of volunteers to contribute to services that were previously the sole responsibility of governments. At the extreme, under plans such as the British government’s ‘Big Society’ initiative and the closely related public-nonprofit partnerships strategy, charities and volunteers are seen as a resource to fill the gap left by the withdrawal of public spending and agencies (Bartels et al. 2013). For these reasons, there exists an extensive literature within economics, sociology, psychology and related disciplines focusing on the motivations for pro-social behavior (Andreoni 1989, 1990; Clary et al. 1998; Penner and Finkelstein 1998).

Despite this burgeoning literature on the motivations for pro-social behaviors, only a few studies have analyzed the stability of volunteering behavior over the life-course (Butrica et al. 2009; Lancee and Radl 2014; Oesterle et al. 2004; Thoits and Hewitt 2001; Wilson and Musick 1997). While these studies suggest volunteering is an enduring activity, little is known about the mechanisms that drive

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<sup>1</sup> Provided by frequent volunteers which the ONS (2017) defines as those who volunteer at least once per month.

this persistent, sustained pattern of behavior. In particular, what these studies fail to address, and therefore what forms the basis of our current investigation, is that persistent volunteering behavior can be driven by two distinct, but mutually inclusive mechanisms. That is: (1) ‘spurious’ state dependence—the trait behaviors of individuals which affect their volunteering behavior over the life-course and (2) ‘true’ state dependence—the causal influence of prior volunteering behavior on current behavior. The first source of persistent behavior suggests that sustained patterns of volunteering behavior originate from characteristic behaviors, values and personality traits that are established in pre-adult life and remain stable over the life-course (Brown et al. 2015; Janoski and Wilson 1995; Janoski et al. 1998).<sup>2</sup> The second source of persistent behavior—the causal influence of prior volunteering behavior on current behavior—is consistent with theories of social capital and the ‘warm glow’ hypothesis. Specifically, participation in volunteering activities is viewed as fundamental for enhancing and developing social networks and social ties, and the bonds of trust, cooperation and norms of generalized reciprocity that these connections supply—all of which make subsequent volunteer activity participation more likely (Johnson et al. 1998; Oesterle et al. 2004; Putnam 1995). It could also be that doing good things makes people feel good, with this ‘warm glow’ encouraging subsequent good behavior.

This omission in the literature is particularly surprising given that public policies across the globe have been increasingly focused on national service programmes and community service in schools, with the underlying intention of inducing ongoing pro-social behavior—thereby, expanding the future aggregate level of volunteering in the economy. Examples of these policies include the National Citizen Service initiative in the UK, Service-Learning in the USA and Mutual Obligation Policies in Australia. Understanding whether individuals who have experienced volunteering in the past may be more likely to engage in volunteering in the future is crucial for understanding the extent to which these policy aims can be achieved. Of course, if ‘Big Society’ type initiatives are also to be achievable, the withdrawal of public spending and agencies must be accompanied, at least in part, by an increase in the long-term aggregate level of volunteer activity participation.

Using seven waves of a large UK longitudinal household survey—the British Household Panel Survey (BHPS)—we find, consistent with the previous studies, considerable evidence of persistent, sustained volunteering behavior (where persistence is operationalized as the

tendency for individuals who volunteer in one period to volunteer in subsequent periods). Most importantly, we find that both ‘spurious’ and ‘true’ state dependence are important factors in explaining this stable behavior. The strong evidence of a causal influence of past volunteering on current and future participation suggests that volunteering-stimulating policy measures—such as the UK government’s introduction of the National Citizen Service for all young people between 16 and 17 years of age—will have a more profound effect because they do not only affect current volunteering activities but are also likely to induce a permanent change in favor of volunteering participation. Conversely, if individual-specific characteristic behaviors were solely responsible for persistent behavior over the life-course, which is not what we find, government support programmes are unlikely to have long-lasting affects.

The remainder of this article is organized as follows. The next section describes the relationship between past and present volunteering behavior. The data and methods used in the analysis are then discussed, and the results of the analysis presented. The last section provides a final discussion.

## The Relationship Between Past and Present Volunteering Activity

People tend to consistently engage in charitable activity over time, and indeed, past volunteering is one of the strongest predictors of future volunteering (Mutchler et al. 2003; Thoits and Hewitt 2001). The few studies that have examined changes in volunteering activity for the same individuals over time tend to support this notion of persistent activity. For instance, using two waves of data from a nationally representative longitudinal survey—the American’ Changing Lives Study—Wilson and Musick (1997) and Thoits and Hewitt (2001) found a high level of stability in volunteer activity participation. Furthermore, Butrica et al. (2009) and Oesterle et al. (2004) using longitudinal data from the Health and Retirement Study and Youth Development Study, respectively, found considerable stability among volunteers and non-volunteers.<sup>3</sup> However, what these studies fail to address, and what forms the basis of our investigation, is that persistent volunteer activity participation is consistent with two mutually inclusive possibilities: ‘true’ and ‘spurious’ state dependence.

<sup>3</sup> Oesterle et al. (2004) do report that young adults were almost eight times as likely to volunteer in a given year if they had volunteered the year before. However, the authors do not control for unobserved heterogeneity, and as such, their estimates cannot be interpreted as a causal effect.

<sup>2</sup> Traits are distinct from ‘states,’ which are temporary behaviors that depend on an individual’s situation and motives at a particular time.

Firstly, stable and persistent volunteering behavior may reflect a causal influence of past behavior on current behavior. A consequence of experiencing an event (engagement in volunteering) is that preferences or any constraints relevant to future behavior may be altered (Heckman 1981). Individuals who have engaged in volunteering behavior in the past are therefore more likely to engage in that same behavior in the future. There are several possible mechanisms through which this causal effect may operate. Here, we focus on two. The first is linked to theories of social capital. Participation in volunteering activities enhances social networks, social ties (including friendship networks and organizational memberships) and, importantly, connections to others in social institutions. These ties make subsequent volunteer activity participation more likely by fostering trust and norms of generalized reciprocity, and by creating obligations and providing support (Putnam 1995). Moreover, enhanced connections to others in social institutions, as well as increasing the likelihood that one will be invited to engage in civic activities (Brady et al. 1999), also increase information and access for further volunteering opportunities (Oesterle et al. 2004). Similarly, connections to others in social institutions, insofar as these institutions foster the development of civic skills and a sense of civic mindedness, are indicative of subsequent volunteering activity (Brady et al. 1999; Mutchler et al. 2003; Oesterle et al. 2004). The second mechanism is linked to the ‘warm glow’ hypothesis, perhaps the most influential model of why people engage in pro-social behavior (Andreoni 1989, 1990). Here, pro-social behavior enters the utility function as individuals derive positive emotional experiences, a ‘warm glow,’ from the act of helping others (Andreoni 1989). Individuals may also have a desire to win prestige, respect and enhance their social image (Andreoni 1990; Sanghera 2016). Therefore, pro-social behavior can also be motivated by a desire to receive social acclaim or avoid scorn from others. These factors which influence the decision to act prosocially exhibit selfish elements and are therefore generally considered to be models of ‘impure altruism.’ There now exists a substantial body of research suggesting that pro-social behavior has many physiological and psychological benefits (Borgonovi 2008; Mellor et al. 2009; Musick and Wilson 2003; Post 2005). Therefore, when individuals derive a positive emotional experience from the act of helping other people (Andreoni 1989, 1990), this ‘warm glow’ may increase the likelihood of acting in a pro-social way in the future (van der Linden 2015). After all, *‘once you have a certain new experience, you need to keep on having more of it if you want to sustain your happiness’* (Layard 2011). While individuals may directly receive a ‘warm glow’ or ‘helpers high’ from volunteering—when the act of helping others actually

makes people feel good—the psychological benefits of volunteering may also be derived indirectly from enhanced connectedness, social contact and a sense of worth and status (Andreoni 1990; Nichols and Ralston 2011; Son and Wilson 2012). This type of temporal persistence, where there is a causal effect of past behavior on current and future behavior, is referred to as ‘true’ state dependence.

Alternatively, persistence in behavior may be driven by personality traits and other stable characteristic behaviors or values that are not always readily observable to researchers (Brown et al. 2015; Janoski and Wilson 1995). For instance, a higher tendency to volunteer has been found to be associated with altruistic values (Hodgkinson 2003), higher openness to experiences (Binder and Freytag 2013) and higher agreeableness (Carlo et al. 2005). It is generally assumed that these characteristic behaviors are established in pre-adult life through intergenerational transmission mechanisms and other early socialization experiences and remain largely unaltered during adulthood (Janoski et al. 1998). To the extent that these often unobservable factors are persistent over time, they will induce persistence in volunteering behavior. Past volunteering behavior may therefore appear to have a causal influence on future volunteering behavior by simply picking up the effect of permanent unobserved individual heterogeneity. This mechanism is commonly referred to as ‘spurious’ state dependence. An understanding of the relative magnitude of ‘true’ and ‘spurious’ state dependence has important consequences for policy design.

If volunteering behavior exhibits (at least in part) ‘true’ state dependence, then public policy designed to influence volunteering today will simultaneously be an investment in future volunteering behavior. For example, if volunteering is truly state dependent, a government policy that is able to turn a non-volunteer into a volunteer at a given point in time will induce a permanent change in this individual’s future volunteering behavior. Policies such as the UK government’s introduction of the National Citizen Service for all young people between 16 and 17 years of age will therefore not only be an investment in current volunteering, but also by generating the foundation necessary to induce ongoing pro-social behavior, a strong investment in future volunteering (McCulloch 2014). Conversely, if permanent individual heterogeneity is the main source of persistent behavior, then even government support programmes which are successful in turning a non-volunteer into a volunteer at a given point in time are unlikely to durably influence the individual’s future volunteering participation. Unless, of course, these support programmes focus on measures which have the potential to improve volunteering-relevant permanent individual-specific characteristic behaviors.

## Data Source and Descriptive Statistics

The data used for analysis are taken from the British Household Panel Survey (BHPS), a nationally representative survey of more than 5000 households which contains approximately 10,000 individuals aged 16 and over. The survey instrument is a questionnaire involving a household section, and individual sections, covering a range of topics including household composition, housing characteristics, education and training, health, labor market status and values and opinions on social and political matters. The questionnaire is administered to all adult household members (including new household members at each wave). Repeat interviews take place annually, with 18 annual waves available to researchers between 1991 and 2008. The data used in the subsequent analysis are restricted to the original BHPS sample covering Great Britain. The dependent variables in all analyses that follow are responses from this survey instrument:

We are interested in the things people do in their leisure time, I'm going to read out a list of some leisure activities. Please look at the card and tell me how frequently you do unpaid voluntary work.

1. At least once a week.
2. At least once a month.
3. Several times a year.
4. Once a year or less.
5. Never/almost never.

The question was administered in the 1996, 1998, 2000, 2002, 2004, 2006 and 2008 waves of the BHPS. From this question, we create two key variables. First, we create a binary variable of engagement in voluntary work (VE):

- Voluntary Work Engagement = 0 if reported '*never/almost never*.'
- Voluntary Work Engagement = 1 if reported '*once a year or less*' or '*several times a year*' or '*at least once a month*' or '*at least once a week*.'

Secondly, we create an ordinal variable to measure voluntary work frequency (VF) that is consistent with the ONS (2017) definition of frequent volunteers:

- Voluntary Work Frequency = 0 if reported '*never/almost never*.'
- Voluntary Work Frequency = 1 if reported '*once a year or less*' or '*several times a year*.'
- Voluntary Work Frequency = 2 if reported '*at least once a month*' or '*at least once a week*.'

The sample used for our analysis is limited to only those individuals who were observed in all seven waves and who

had valid responses to the dependent and independent variables used. This yields a final balanced panel of 4323 individuals with 30,261 individual-year observations. Table 1 reports the descriptive statistics and includes the control variables used in the subsequent multivariate analysis. Approximately 77 percent of the balanced sample reports 'never/almost never' engaging in voluntary work, while 7.3 percent reports engaging at least once a week. The mean age of the balanced sample is approximately 49 years. Just over 56 percent of the sample is female, 14 percent report holding a university degree with 19.8 percent reporting leaving compulsory schooling with no formal qualifications. Lastly, 63.2 percent of the sample is currently in some form of employment.

To illustrate the persistence of volunteering revealed in the seven waves of data, we first analyze two Markov chains for our binary and ordinal indicators of voluntary work. For our binary measure, with the two possible states of volunteering engagement,  $VE = \{0, 1\}$ , the transition matrix is given by:

$$P = \begin{array}{cc} & \begin{array}{c} 0 \\ 1 \end{array} \\ \begin{array}{c} 0 \\ 1 \end{array} & \begin{array}{cc} 87.39 & 12.61 \\ 39.95 & 60.05 \end{array} \end{array} \quad n = 25,938$$

Here, the rows indicate the previous volunteering engagement behavior, while the columns indicate current volunteering engagement behavior. This is illustrative of considerable persistence in volunteering behavior. For instance, the probability of volunteering conditional on volunteering in the previous period,  $\text{Prob}(VE_t = 1 | VE_{t-1} = 1)$ , is 60.05 percent. Moreover, the probability of not volunteering conditional on not volunteering in the previous period,  $\text{Prob}(VE_t = 0 | VE_{t-1} = 0)$ , is 87.39 percent. Prior volunteering also increases the likelihood of current volunteering from 12.61 percent to 60.05 percent, or alternatively, by 47.44 percentage points.

For our ordinal measure of frequency, with the three possible states of volunteering frequency,  $VF = \{0, 1, 2\}$ , the transition matrix is given by:

$$P = \begin{array}{ccc} & \begin{array}{ccc} 0 & 1 & 2 \end{array} \\ \begin{array}{c} 0 \\ 1 \\ 2 \end{array} & \begin{array}{ccc} 87.39 & 7.61 & 5.00 \\ 55.09 & 29.15 & 15.75 \\ 26.51 & 15.68 & 57.81 \end{array} \end{array} \quad n = 25,938$$

The rows continue to indicate the previous volunteering frequency behavior, while the columns indicate current volunteering frequency behavior. Again persistence is observable. For the most extreme cases,  $VF = (0, 2)$ , it is clear that the probabilities of transitions to the highest volunteering frequency from the lowest volunteering frequency, or the reverse, are very small. Consequently, individuals are more likely to remain close to their prior volunteering frequency state than adjust significantly from

**Table 1** Descriptive statistics

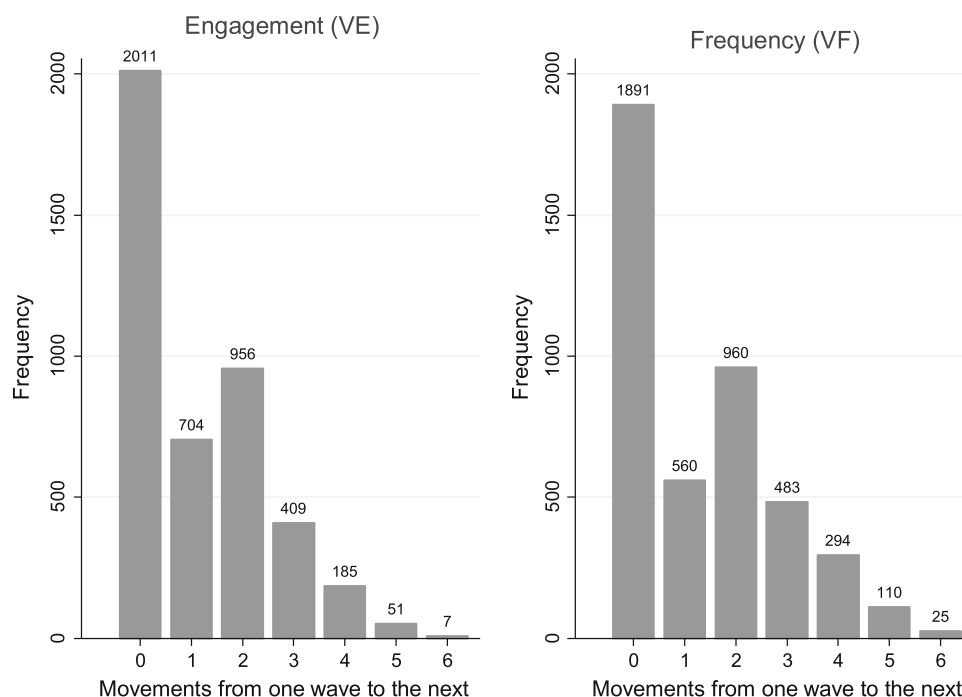
Variables	Mean/frequencies	SD
Dependent variable		
Voluntary work		
Never/almost never	0.768	
Once a year or less	0.053	
Several times a year	0.054	
At least once a month	0.052	
At least once a week	0.073	
Control variables		
Female	0.562	
Age	49.120	15.750
White	0.971	
Self-employed	0.075	
Employee	0.557	
Unemployed	0.019	
Retired	0.219	
Family care	0.005	
Economically inactive	0.125	
Hours worked	21.670	19.120
Married	0.751	
Widowed/divorced/separated	0.138	
Never married	0.111	
Spouse/partner employed	0.504	
Number of dependent children in the household	0.553	
Household size	2.763	1.273
University degree	0.139	
Vocational college qualification	0.314	
A-level	0.098	
O-level/GCSE's	0.168	
Other qualifications	0.083	
No qualifications	0.198	
Number of cigarettes smoked	3.330	7.420
General health	0.082	
Log household income	7.695	0.755
Own house outright	0.316	
Own house with mortgage	0.494	
Rents house, private sector	0.058	
Rents house, social sector	0.132	
Observations	30,261	
Number of individuals	4323	

it. For the moderate frequency case, ( $VF = 1$ ), although the highest probability is the transition to not volunteering, important persistence is still observed:  $\text{Prob}(VF_t = 1 \text{ or } 2 | VF_{t-1} = 1) = 44.91$  percent.

An alternate representation of persistence in volunteering behavior is presented in Fig. 1—illustrating the distribution of the individual variability in volunteering engagement and volunteering frequency by utilizing the sum of the absolute values of movements from one wave to

the next. Approximately 46.5 percent of individuals experienced no change in their volunteering engagement across the seven waves of data, with 194 individuals recording engagement in voluntary work in every wave. To put this in perspective, consider a seven-period game where people are assigned to either participate or not participate in voluntary work. Behavior is determined on sequential independent draws from a binomial distribution across the seven periods. Assuming that the probability of engaging in

**Fig. 1** Frequency distribution of the observed variability in volunteering engagement and frequency



voluntary work is 0.23 (the average probability of engaging in voluntary work in our dataset), for our sample of 4323 individuals, we would expect  $(0.23^7) \times 4323 = 0.15$  individuals to record voluntary work engagement in all seven periods. Similarly, for volunteering frequency, 43.7 percent of individuals experienced no change in their volunteering frequency across the seven waves of data with only 21.1 percent of individuals exhibiting three or more changes. In summary, the raw data provide strong evidence that prior volunteering behavior is an important predictor of current behavior. In extending the previous research, what remains is to decompose the ‘persistence’ observed in the raw data into that which can be explained by unobservable permanent heterogeneity (‘spurious’ state dependence) and ‘true’ state dependence.

## Econometric Strategy

To formally model the persistence of volunteering, we use a dynamic random effects probit model to decompose the ‘persistence’ observed in the raw data into that which can be explained by unobservable permanent heterogeneity (‘spurious’ state dependence) and ‘true’ state dependence. The model is then extended to an ordered probit to analyze for the frequency measure of volunteering behavior. This methodology has been used extensively in the economics discourse for accessing health mobility (Contoyannis et al. 2004), within marketing for testing consumer choice dynamics (Erdem and Sun 2001) and more recently within

sociology for testing the persistence of generalized trust beliefs (Dawson 2017). The general form of the dynamic probit model for volunteering engagement can be written as follows:

$$VE_{it}^* = \delta VE_{it-1} + \beta' X_{it} + \alpha_i + \varepsilon_{it}, \quad (i = 1, \dots, N; t = 2, \dots, T_i) \quad (1)$$

where  $VE_{it}^*$  is the individual’s latent probability of volunteering in each year of the sequence of  $T_i$ .  $VE_{it}$  is a binary indicator that takes on the value of one in each year  $t$  ( $VE_{it} = 1$ ) when an individual is observed to have engaged in volunteering, which occurs when his/her propensity to volunteer exceeds a threshold (zero in this case). Correspondingly,  $VE_{it-1}$  is the indicator for the individual’s volunteering behavior in the previous period, and  $X_{it}$  is a vector of sociodemographic and socioeconomic control variables. The remaining variation in volunteering behavior is represented by  $\alpha_i + \varepsilon_{it}$ :  $\alpha_i$  is an unobservable individual-specific attribute (random effect), and  $\varepsilon_{it}$  is an idiosyncratic error term which captures the effect of time-varying unobservable determinants. Both are assumed to be normally distributed with a mean of zero. The variance of  $\varepsilon_{it}$  is normalized to one, and the variance of  $\alpha_i$  estimated by the model.

Two issues arise from this standard random effects model. Firstly, it assumes that  $\alpha_i$  and  $X_{it}$  are uncorrelated with each other. Secondly, because a dynamic model is estimated an ‘initial conditions’ problem arises as  $VE_{i1}$  is correlated with  $\alpha_i$  which then induces a correlation between  $\varepsilon_{it}$  and  $VE_{it-1}$  and leads to a bias in the estimated

parameter. To address the initial conditions problem in estimating dynamic models and to allow  $\alpha_i$  to be correlated with the regressors, we follow the respective approaches laid out by Wooldridge (2005) and Mundlak (1978). Specifically, we specify a model that assumes  $\alpha_i$  is both correlated with the regressors and the initial endowment of volunteering. This approach is implemented by parameterizing the individual effect as:

$$\alpha_i = \alpha_0 + \gamma' \bar{X}_i + \phi VE_{i1} + u_i \tag{2}$$

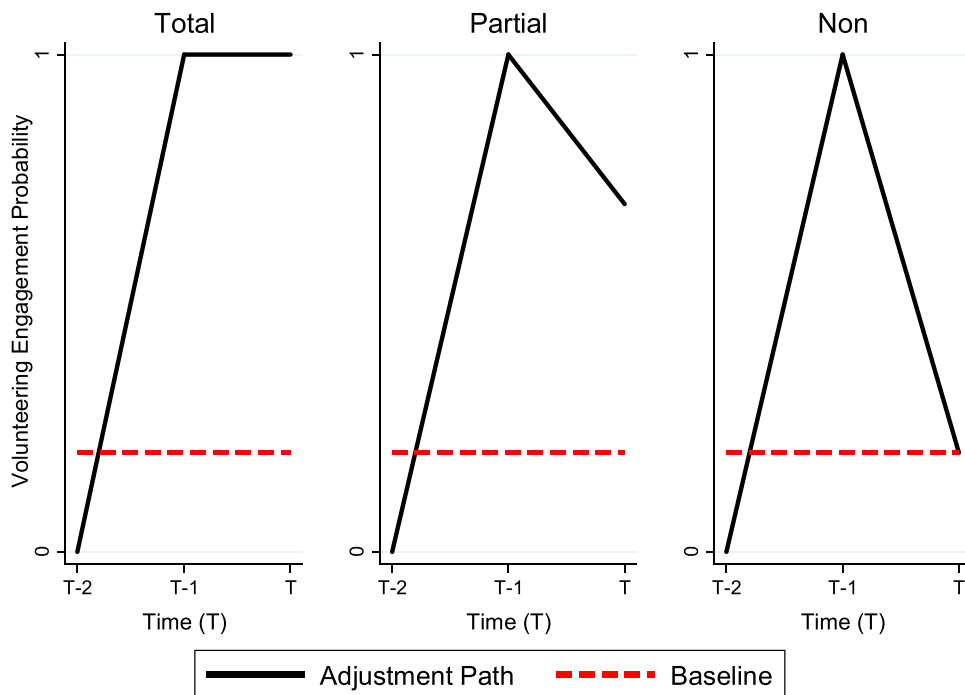
where  $\bar{X}_i$  represents the individual time means of all the time-varying control variables,  $u_i$  is the individual effect which is assumed to be distributed  $N(0, \sigma_u^2)$ , and  $VE_{i1}$  is the individual's initial volunteering behavior. Substituting Eq. (2) into (1) provides the full model as shown in Eq. (3). The parameter  $\delta$  measures 'true' state dependence and therefore, the extent to which past volunteering behavior is passed on to both contemporary and future volunteering behavior. At the two extreme cases, an exogenously determined change in prior volunteering behavior (shock) will either be permanently passed on to future volunteering behavior ( $\delta = 1$ ) or alternatively, shocks will fully dissipate ( $\delta = 0$ ) and the individual will revert immediately to his or her baseline volunteering behavior. The usefulness of a distinction between absolute and partial persistence is illustrated in Fig. 2. Here, an individual has a baseline propensity to volunteer in each period, but faces an observable exogenous shock in volunteering behavior between time  $t - 2$  and  $t - 1$ . This shock will then be passed on to the individual's behavior at time  $t$ , through

either total, partial or nonpersistence. The estimate of  $\phi$  in Eq. (3) is also relevant as it provides information about the correlation between the individual effect and the individual's initial volunteering behavior.

$$VE_{it}^* = \delta VE_{it-1} + \beta' X_{it} + \gamma' \bar{X}_i + \phi VE_{i1} + u_i + \varepsilon_{it}, \quad (i = 1, \dots, N; t = 2, \dots, T_i) \tag{3}$$

In order to account for the heterogeneity in sociodemographic and socioeconomic factors that have been shown to influence volunteering behavior, standard control variables are included in the regression model. Basic demographic variables include: age, gender, education and ethnicity. In general, volunteering increases with younger- and middle-aged cohorts and decreases in older groups as health becomes an issue (Einolf 2009). The young may volunteer to increase employment prospects and other work-related outcomes (Johnson et al. 1998), while older volunteers tend to be motivated to a greater extent by service or community concerns (Omoto et al. 2000). Gender is included as an important control as women tend to be more altruistic and pro-social than men (Helms and McKenzie 2014; Mesch et al. 2006). Education has been found as one of the strongest predictors of engagement in volunteering (Son and Wilson 2012) with more educated individuals having the highest levels of volunteer engagement (Dekker and van den Broek 1998; Lancee and Radl 2014; Mutchler et al. 2003). Household structure is another important determinant of volunteering and is captured by the following variables: log-transformed household income, marital status, housing tenure, the number of

**Fig. 2** Adjustment path of an exogenous shock to volunteering engagement



dependent children in the household and household size. These household variables affect the resources (time and/or money) available to give to philanthropic organizations.

Health status, an important determinant in volunteering studies, is also included and is captured by a binary variable capturing self-reported general health over the last 12 months. The binary health variable captures individuals with ‘excellent’ or ‘good’ health as compared to ‘fair,’ ‘poor’ or ‘very poor’ health. We also include as a further indicator of health, the number of cigarettes smoked per day. Poor health has been found to be one of the most important factors acting as a barrier to volunteer engagement (Sundeen et al. 2007). Economic activity is captured through a series of dummy variables capturing heterogeneity in employment and economic inactivity as well as a continuous measure of usual weekly working hours. While work commitments limit an important resource related to volunteering behavior (Mutchler et al. 2003; Sundeen et al. 2007), individuals who work longer hours may give more time, in a ‘workaholic’-like commitment (Taniguchi 2006). In general, those who are in full-time employment are more likely to volunteer (Martinez and McMullin 2004).

## Results

Column 1 of Table 2 reports the results from the dynamic probit model for volunteering engagement as presented in Eq. (3). Column 2 presents the results from the equivalent dynamic ordered probit model for volunteering frequency. Marginal effects are reported where characteristics are held constant at their respective sample mean values and the random effect is set to zero. The marginal effects for the time-varying control variables can be interpreted as measures of short-term transitory effects. These estimates are equivalent to that from a fixed-effect estimator (as shown in Mundlak 1978). The estimated parameters for the individual time mean measures of the time-varying control variables can be interpreted as long-term or permanent effects. For brevity and ease of exposition, we only report the results for the variables of interest. Full results are available in Table 3 in ‘Appendix.’

Firstly, recalling that the  $\varepsilon_{it}$  is assumed to be  $N(0, 1)$  and  $u_i$  is assumed to be  $N(0, \sigma_u^2)$ , the total error variance is therefore given by  $\sigma_u^2 + 1$ . The importance of unobserved permanent heterogeneity in understanding the overall error variance is given by  $\rho = \sigma_u^2 / (\sigma_u^2 + 1)$ , which is the intra-class correlation of volunteering behavior across periods. When  $\rho$  is high, unobserved permanent heterogeneity (‘spurious’ state dependence) is important and individuals can be said to experience high persistence in volunteering

**Table 2** Correlates of volunteering behavior—dynamic correlated random effects probit/ordered probit

Variables	(1) Engagement	(2) Frequency			
	Marginal Effects $VE = 1$	Variables	Marginal effects $VF = 2$	Marginal effects $VF = 1$	Marginal effects $VF = 0$
$VE_{t-1} = 1$	0.171** (0.012)	$VF_{t-1} = 1$	0.033** (0.004)	0.048** (0.005)	– 0.081** (0.010)
$VE_1 = 1$	0.259** (0.014)	$VF_{t-1} = 2$	0.151** (0.012)	0.139** (0.006)	– 0.291** (0.017)
		$VF_1 = 1$	0.069** (0.007)	0.087** (0.007)	– 0.156** (0.014)
		$VF_1 = 2$	0.159** (0.012)	0.146** (0.008)	– 0.304** (0.019)
$\sigma_u^2$			0.406** (0.031)		
$\rho = \sigma_u^2 / (\sigma_u^2 + 1)$	0.322** (0.016)		0.290		
Log likelihood	– 10,425.9		– 14,129.7		
Observations	25,938		25,938		
Individuals	4323		4323		

Main entries are unstandardized marginal effects. Robust standard errors in parentheses are adjusted for intra-individual correlation. The models all include the control variables presented in Table 1 as well as a series of regional and year effects. The models also include the time means of all the time-varying control variables. Full results are presented in Table 3 of ‘Appendix.’ Asterisks indicate significant coefficients: \*\* $p < 0.01$



behavior. However, when  $\rho$  is low, individuals experience relatively high random fluctuations and therefore, low persistence in their volunteering behavior. From Table 2, unobserved permanent individual heterogeneity is an important influence for volunteering persistence in both the volunteering engagement and frequency models. It is estimated to explain 32.2 and 29.0 percent of the overall error variance, respectively. Therefore, selection effects are important aspects of continuity in volunteerism across the life-course. This unobserved permanent heterogeneity is likely to include underlying characteristic behaviors, personality traits and established values, which if not controlled for, will lead to biased parameter estimates in the causal effect of past behavior on current behavior.

Secondly, controlling for observed and unobserved individual heterogeneity, the evidence shows that a shock (i.e., an exogenously determined change in prior behavior) to past voluntary engagement has a genuine behavioral effect. An observationally equivalent individual who did not experience such a shock will behave differently in the future than an individual who did experience the shock. Specifically, the ‘true’ state dependence estimate shows a statistically significant positive association between past and contemporary voluntary behavior for both our volunteering frequency (VF) and engagement (VE) models. With respect to our volunteering engagement model, the marginal effect suggests that someone who volunteers in  $t - 1$  has a probability of contemporary volunteering approximately 17.1 percentage points higher than someone who did not volunteer in  $t - 1$ . The corresponding predicted probabilities of  $\text{Prob}(VE_t = 1|VE_{t-1} = 1)$  and  $\text{Prob}(VE_t = 1|VE_{t-1} = 0)$  from which the marginal effect is derived are 28.6 and 11.5 percent, respectively. Therefore, conditional on having volunteered in the previous period, the probability of volunteering in the current period is approximately 2.5 times higher than the person who did not volunteer in the previous period. Oesterle et al. (2004) using a pooled model report that young adults were almost eight times as likely to volunteer in a given year if they had volunteered the year before. However, because the authors do not control for unobserved heterogeneity, their estimates are an amalgam of selection and causal effects. In order to get an indication of the relative size of this ‘true’ state dependence effect, we compare the ‘true’ state dependence estimate to the raw aggregate probabilities contained in the corresponding Markov chain. In doing so, we can estimate that approximately 36 percent of the observable persistence in the Markov chain is attributable to ‘true’ state dependence.<sup>4</sup> The individual’s initial volunteering status is also

<sup>4</sup> Specifically, the difference in  $\text{Prob}(VE_t = 1|VE_{t-1} = 1)$  and  $\text{Prob}(VE_t = 1|VE_{t-1} = 0)$  from our econometric model gives us a marginal effect of 17.1 percentage points (Table 2). This is then

positive and highly statistically significant representing a strong correlation between an individual’s initial volunteering behavior and the unobserved permanent heterogeneity.

For our volunteering frequency model, the predicted probabilities of  $\text{Prob}(VF_t = 2|VF_{t-1} = 2)$ ,  $\text{Prob}(VF_t = 2|VF_{t-1} = 1)$  and  $\text{Prob}(VF_t = 2|VF_{t-1} = 0)$  are 18.3, 6.5 and 3.2 percent, respectively. The difference between these predicted probabilities gives the marginal effects presented in column 2 of Table 2 and therefore the contribution of ‘true’ state dependence. For instance, the marginal effect suggests that someone who is in the highest volunteering frequency state in  $t - 1$  has a probability of currently being in the highest volunteering frequency state approximately 15.1 percentage points higher than someone who was in the lowest volunteering frequency state in  $t - 1$ . In order to get an indication of the size of these ‘true’ state dependence effects, we again compare the ‘true’ state dependence estimate to the raw aggregate probabilities contained in the Markov chain. Approximately 30 percent of the observable persistence in the Markov chain can be attributed to ‘true’ state dependence.

A final important finding is that both the time-averaged household income variable and the time-averaged university degree variable in the dynamic models (see Table 3 in ‘Appendix’), representing relatively fixed underlying socioeconomic differences between individuals, are positive and statistically significant. Additionally, the respective time-varying control variables, representing short-term transitory effects, are not statistically significant. This further highlights the importance of permanent socioeconomic factors in predicting volunteering behavior, as well as the absence of time-varying environmental influences.<sup>5</sup>

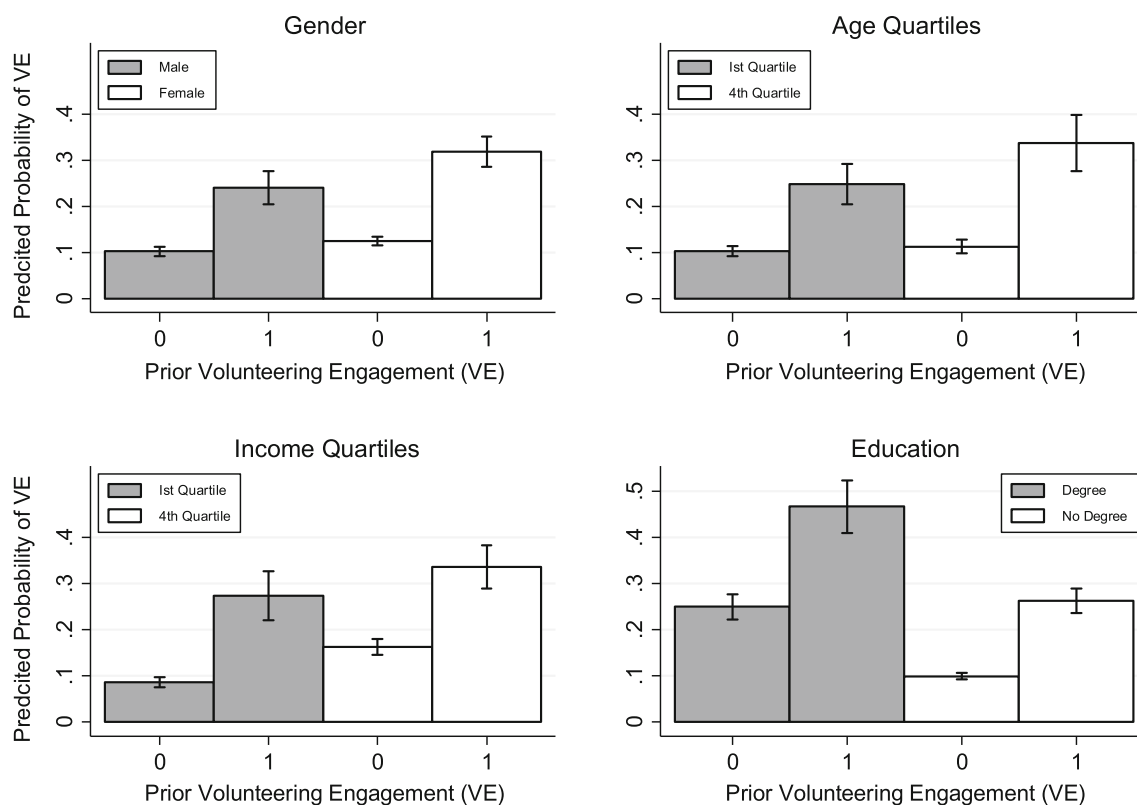
### Subsample Analysis

This section uses Eq. (3) and a subsample analysis to investigate for the ‘true’ state dependence effects across

Footnote 4 continued

compared to the difference in  $\text{Prob}(VE_t = 1|VE_{t-1} = 1)$  and  $\text{Prob}(VE_t = 1|VE_{t-1} = 0)$  as derived from the raw probabilities contained in the Markov chain. The difference in the raw probabilities is  $60.05 - 12.61 = 47.44$ . Therefore,  $(\frac{17.1}{47.4}) \times 100 = 36\%$  of the observed persistence is attributable to ‘true’ state dependence. See the first column of Table 4 in “Appendix” for further details.

<sup>5</sup> Following Wooldridge (2005), our analysis uses a balanced panel. One argument is that this restriction may lead to sample selection bias, given that sustained collaboration with social science research is in itself akin to a stable form of volunteering. For this reason, we repeat the analysis on a larger unbalanced sample. This yields a final unbalanced panel of 10,143 individuals with 41,805 individual-year observations. With respect to the estimates of ‘spurious’ and ‘true’ state dependence, the results from the unbalanced sample are almost identical to those derived from the balanced sample.



**Fig. 3** True state dependence for volunteering engagement. Note: Error bars are 95% confidence intervals

socioeconomic groups. Specifically, we split the sample by: gender; by age quartiles at the first wave; household income quartiles at the first wave; and educational attainment. Figures 3 and 4 report the predicted probabilities of volunteering in the current period conditional on volunteering behavior in the previous period. See Tables 4 and 5 in ‘Appendix’ for further results. Figure 3 reports the estimates for volunteering engagement (VE) and Fig. 4 for volunteering frequency (VF).

For brevity, we choose to only report the predicted probabilities from the first and fourth quartiles of the age and household income distributions. The mean age is 24.8 and 64.1 for the first and fourth quartiles of the age distribution, respectively. For the household income distribution, the respective mean incomes for the first and fourth quartiles are £843.92 and £4625.42. Similarly, with respect to education level, we only report the university educated against those with no formal qualifications. However, there is a clear gradient of effects when analyzing entire distributions. It is worth noting that the proportion of the total error variance explained by the unobserved individual effect is relatively high and stable throughout the subsample analysis, although it is the lowest estimate for those in the first quartile of the age distribution (see Table 4 in ‘Appendix’). From Fig. 3, and consistent with the

literature, women and those with a university degree are the most likely to engage in voluntary work (Andreoni and Vesterlund 2001). Volunteering also increases with age. With respect to ‘true’ state dependence, the evidence shows that females, those in the fourth quartile of the age distribution and those with a university degree have the largest estimates. These differences in ‘true’ state dependence do, however, tend to be small across our socioeconomic groups. This suggests that long-term volunteering-enhancing government support programmes should not necessarily be focused on specific sections of society.

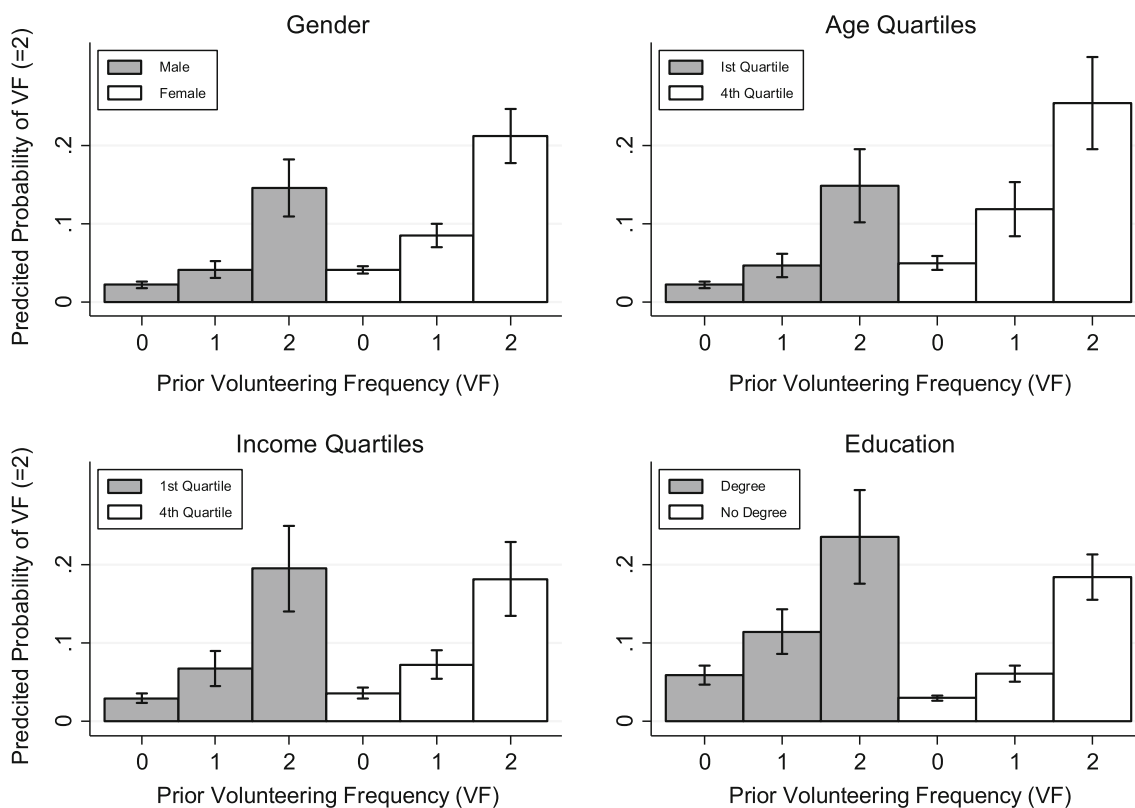
From Fig. 4, a similar pattern of results reveals themselves. Across all of our subsample analyses, the evidence shows that the predicted probability of volunteering at the highest frequency ( $\text{Prob}(VF = 2)$ ) is increasing in prior volunteering frequency. For example, for those individuals in the fourth quartile of the age distribution, the respective predicted probabilities for  $\text{Prob}(VF_t = 2|VF_{t-1} = 1)$  and  $\text{Prob}(VF_t = 2|VF_{t-1} = 0)$  are 11.91 and 4.98 percent. This is an increase of 6.93 percentage points, or equivalently an increase of 139 percent. Similarly, for those in the fourth quartile of the age distribution, the respective probabilities for  $\text{Prob}(VF_t = 2|VF_{t-1} = 2)$  and  $\text{Prob}(VF_t = 2|VF_{t-1} = 1)$  are 25.46 and (again) 11.91 percent, an increase of 13.55 percentage points or 114 percent.

## Conclusion

Public agencies around the globe have launched initiatives focusing on national service programmes and mandatory community service in schools, with the underlying intention of inducing ongoing pro-social behavior—thereby, expanding the future aggregate level of volunteering in the economy. Within the UK specifically, these initiatives have been accompanied by ‘Big Society’ style strategies—designed to enable charities and volunteers to play a bigger role in the provision of public services—which at their core require a growing level of volunteer activity participation. An understanding of how experiences of volunteering in the past will affect current and future participation is crucial for determining the extent to which these integrated policy aims can be achieved. However, while the previous studies have highlighted a strong relationship between past and current volunteering behavior (Glass et al. 1995; Mutchler et al. 2003; Wilson and Musick 1997), little is known about the mechanics behind this temporal phenomenon. Identifying the extent to which this reflects a causal relationship (‘true’ state dependence) or unobserved permanent heterogeneity (‘spurious’ state dependence) is crucial for understanding the long-term effectiveness of volunteering-enhancing public policies.

Using seven waves of data from the BHPS, we find that volunteering behavior is highly persistent. In the first instance, we observe in our raw data that prior volunteering engagement increases the likelihood of current volunteering engagement from 12.61 to 60.05 percent or an increase of approximately 376 percent. What sets our analysis apart from prior research is the use of an innovative methodology that enables us to, after controlling for the effects of observable socioeconomic and sociodemographic factors, decompose this observed persistence in volunteering behavior into two components: (1) ‘true’ state dependence—the causal influence of prior volunteering behavior on current behavior, and (2) ‘spurious’ state dependence—the unobserved heterogeneity or underlying characteristic behaviors of individuals which affect their volunteering behavior. Our evidence shows that approximately 36 percent of the observable persistence can be attributed to ‘true’ state dependence, with the remainder attributable to observable and unobservable heterogeneity.

The key conclusion that follows from these findings is that government support strategies which are able to turn a non-volunteer into a volunteer today—whether this can be achieved through service-learning programs implemented in schools or within the wider community, and whether these programs should be mandatory or voluntary should



**Fig. 4** True state dependence for volunteering frequency. Note: Error bars are 95% confidence intervals

serve as an avenue for further research—will effectively induce a permanent change in this individual’s future volunteering behavior. In turn, this suggests that initiatives such as the UK governments National Citizen Service for all young people between 16 and 17 years of age will be effective, as the policy’s underlying intention of generating the skills and networks necessary to induce ongoing participation in volunteering appears to be built on solid empirical foundations. Depending on its uptake, this government initiative has the potential to increase the future, aggregate level of volunteering in the economy. Despite the majority of government initiatives in the UK being focused on the young, our results also suggest that long-term volunteering-enhancing support programmes do not necessarily need to be concentrated on specific sections of society in order to be effective. It should also be noted that volunteering is not always initiated directly by government support programmes. People may volunteer at various stages of the life-course simply to fulfil personal current objectives. For instance, according to the Volunteer Functions Inventory (VFI), individuals may be motivated to volunteer to gain career-related experience or to reduce negative feelings, such as guilt (Clary and Snyder 1999). Our results suggest that these motivations—which depend on an individual’s situation at a particular time—which are able to turn a non-volunteer into a volunteer today will not only affect current volunteering activities but are also likely to induce a permanent change in favor of volunteering.

However, it should be noted that the presence of substantial permanent individual heterogeneity (‘spurious’ state dependence) in explaining persistent behavior suggests that there are limits and challenges for government support programmes and public policy, respectively. Specifically, if a sufficient proportion of volunteering behavior is influenced by stable values, characteristic behaviors or personality traits inherited in childhood—through intergenerational transmission mechanisms such as imitation, reinforcement, childhood socioeconomic status or parental socialization (Janoski and Wilson 1995)—the challenge for public policies is to identify and enhance these factors. The good news is that certain types of socialization experiences have the potential to build a more engaged society. For instance, children who have observed giving and volunteering behaviors by their parents, and have experienced parenting styles which are authoritative

and are characterized by nurturing actions and displays of warmth, are more likely to act prosocially in later life (see Stukas et al. 2016, for a review).

Lastly, within the UK and other European societies, the aggregate level of volunteering has remained relatively stable (NCVO Almanac 2017). Taken together, our results suggest that volunteering behavior is a very enduring activity, and as such, a key driver of the stability in these aggregate statistics, through both ‘true’ and ‘spurious’ state dependence. An important next step for scholars is therefore to compare inter-country differences in state dependence in volunteering occurrence, in order to shed some light on why observed differences in the long-term level of volunteering vary so much across countries (Plagnol and Huppert 2010). While our results provide the broad mechanisms through which past behavior is related to current and future behavior, it is important for future research to investigate the specifics. In this view, we suggest the following paths for future research: (1) extend this research to other areas of pro-social behavior, (2) further investigate the key volunteering-relevant characteristic behaviors associated with ‘spurious’ state dependence and importantly how they are acquired, whether that be through imitation, reinforcement, childhood socioeconomic status or parental socialization (Janoski and Wilson 1995) and (3) investigate the underlying mechanisms behind the causal link between past and current volunteering, whether that be enhanced social ties, the development of civic skills or the psychological benefits derived from volunteering experiences.

#### Compliance with Ethical Standards

**Conflict of interest** The authors declare that they have no conflict of interest.

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#### Appendix

See Tables 3, 4, 5.

**Table 3** Correlates of volunteering behavior—dynamic correlated random effects probit/ordered probit

Variables	(1) Engagement Marginal effects $VE = 1$	(2) Frequency			
		Variables	Marginal effects $VF = 2$	Marginal effects $VF = 1$	Marginal effects $VF = 0$
$VE_{t-1} = 1$	0.171**	$VF_{t-1} = 1$	0.033**	0.048**	– 0.081**
$VE_1 = 1$	0.259**	$VF_{t-1} = 2$	0.151**	0.139**	– 0.291**
		$VF_1 = 1$	0.069**	0.087**	– 0.156**
		$VF_1 = 2$	0.159**	0.146**	– 0.304**
Control variables					
Female	0.011		0.005	0.008	– 0.014
Age	0.006		0.004	0.005	– 0.009
White	0.033		0.009	0.013	– 0.022
Economic activity (ref: Economically inactive)					
Self-employed	– 0.018		– 0.004	– 0.006	0.010
Employee	– 0.027		– 0.010	– 0.015	0.024
Unemployed	– 0.011		– 0.009	– 0.014	0.023
Retired	– 0.001		– 0.003	– 0.004	0.007
Family care	– 0.090*		– 0.035*	– 0.054*	0.089*
Hours worked	– 0.001		0.000**	– 0.001**	0.001**
Marital status (ref: single, never married)					
Married	– 0.056*		– 0.020*	– 0.030*	0.050*
Widowed/divorced/separated	– 0.029		– 0.009	– 0.014	0.024
Spouse/partner employed	0.015		0.006	0.009	– 0.016
Number of dependent children in the household	0.022**		0.009**	0.014**	– 0.023**
Household size	0.008		0.003	0.005	– 0.008
Education (ref: no qualifications)					
University degree	– 0.027		– 0.009	– 0.013	0.022
Vocational college qualification	0.013		0.006	0.010	– 0.016
A-level	– 0.025		– 0.016	– 0.024	0.040
O-level/GCSE's	– 0.008		– 0.004	– 0.007	0.011
Other qualifications	0.007		0.002	0.004	– 0.006
Number of cigarettes smoked	– 0.001		0.000	0.000	0.000
General health	– 0.015		– 0.007	– 0.010	0.017
Log household income	– 0.004		– 0.003	– 0.005	0.008
Housing tenure (ref: social sector renter)					
Own house outright	0.035		0.013	0.020	– 0.033
Own house with mortgage	0.006		0.001	0.002	– 0.003
Rents house, private sector	– 0.007		– 0.006	– 0.009	0.015
Mean—age	– 0.005		– 0.003	– 0.005	0.008
Mean—self-employed	0.069		0.023	0.035	– 0.058
Mean—employee	0.009		0.002	0.003	– 0.005
Mean—unemployed	– 0.014		– 0.011	– 0.016	0.027
Mean—retired	– 0.043		– 0.009	– 0.014	0.024
Mean—family care	– 0.179		– 0.069	– 0.105	0.174
Mean—hours worked	– 0.002**		– 0.001*	– 0.001*	0.001*
Mean—married	0.094**		0.036**	0.054**	– 0.090**
Mean—widowed/divorced/separated	0.031		0.011	0.017	– 0.028
Mean—spouse/partner employed	– 0.045*		– 0.018*	– 0.027*	0.045*

**Table 3** continued

Variables	(1) Engagement Marginal effects VE = 1	(2) Frequency			
		Variables	Marginal effects VF = 2	Marginal effects VF = 1	Marginal effects VF = 0
Mean—number of dependent children in the household	0.020		0.006	0.009	– 0.016
Mean—household size	– 0.033**		– 0.012**	– 0.019**	0.031**
Mean—university degree	0.202**		0.073**	0.111**	– 0.184**
Mean—vocational college qualification	0.110**		0.041*	0.062*	– 0.103*
Mean—A-level	0.107*		0.047*	0.072*	– 0.119*
Mean—O-level/GCSE's	0.070		0.029	0.044	– 0.073
Mean—other qualifications	0.013		0.005	0.008	– 0.013
Mean—number of cigarettes smoked	– 0.004**		– 0.001**	– 0.002**	0.004**
Mean—general health	– 0.011		– 0.001	– 0.001	0.002
Mean—log household income	0.051**		0.020**	0.030**	– 0.049**
Mean—own house outright	– 0.001		0.001	0.002	– 0.004
Mean—own house with mortgage	0.007		0.004	0.005	– 0.009
Mean—rents house, private sector	0.014		0.008	0.012	– 0.020
$\sigma_u^2$			0.406**		
			(0.031)		
$\rho = \sigma_u^2 / (\sigma_u^2 + 1)$	0.322**		0.290		
	(0.016)				
Log likelihood	– 10,425.9		– 14,129.7		
Observations	25,938		25,938		
Individuals	4323		4323		

Main entries are unstandardized marginal effects. Standard errors are adjusted for intra-individual correlation. The models also include a series of regional and year effects. Asterisks indicate significant coefficients: \* $p < 0.05$ ; \*\* $p < 0.01$

**Table 4** Subsample analysis: raw data probabilities and predicted volunteering engagement probabilities

	Balanced panel	Gender		Age quartiles		Income quartiles		Educational attainment		
		Men	Women	First	Fourth	First	Fourth	Univ. Degree	No Univ. Degree	
<i>Raw data probabilities</i>										
1	$VE_t = 1   VE_{t-1} = 1$	60.05	59.25	60.06	46.40	69.20	60.68	63.36	67.60	58.04
2	$VE_t = 1   VE_{t-1} = 0$	12.61	11.96	13.13	12.55	11.88	10.22	16.14	21.03	11.51
3	(1)–(2)	47.44	47.29	46.93	33.85	57.32	50.46	47.22	46.57	46.53
<i>Predicted probabilities</i>										
4	$VE_t = 1   VE_{t-1} = 1$	28.59	24.04	31.82	24.85	33.69	27.33	33.51	46.63	26.24
5	$VE_t = 1   VE_{t-1} = 0$	11.54	10.20	12.49	10.31	11.26	8.55	16.23	24.90	9.88
6	(4)–(5)	17.05**	13.84**	19.33**	14.54**	22.43**	18.78**	17.28**	21.73**	16.36**
7	(6) as a % of (3)	35.9%	29.3%	41.2%	43.0%	39.1%	37.2%	36.6%	46.7%	35.2%
8	$\rho = \sigma_u^2 / (\sigma_u^2 + 1)$	0.322**	0.353**	0.293**	0.189**	0.364**	0.323**	0.328**	0.296**	0.320**

Main entries in row (6) are unstandardized marginal effects. Entries in row (8) are the estimates of the intra-class correlation coefficients. The models all include the control variables presented in Table 1 as well as a series of regional and year effects. The models also include the time means of all the time-varying control variables. Asterisks indicate significant coefficients: \*\* $p < 0.01$

**Table 5** Subsample analysis: raw data probabilities and predicted volunteering frequency probabilities

	Balanced panel	Gender		Age quartiles		Income quartiles		Educational attainment		
		Men	Women	First	Fourth	First	Fourth	Univ. Degree	No Univ. Degree	
<i>Raw data probabilities</i>										
1	$VF_t = 2 VF_{t-1} = 2$	57.81	58.66	57.30	44.94	63.89	58.92	58.93	58.90	57.62
2	$VF_t = 2 VF_{t-1} = 1$	15.75	13.80	17.33	9.56	25.56	16.40	17.88	17.40	15.15
3	$VF_t = 2 VF_{t-1} = 0$	5.00	4.10	5.72	3.67	7.19	4.80	5.44	7.06	4.73
4	(1)–(2)	42.06	44.86	39.97	35.38	38.33	42.52	41.05	41.50	42.47
5	(2)–(3)	10.75	9.70	11.61	5.89	18.37	11.60	12.44	10.34	10.42
<i>Predicted probabilities</i>										
6	$VF_t = 2 VF_{t-1} = 2$	18.36	14.58	21.24	14.87	25.46	19.53	18.19	23.62	18.45
7	$VF_t = 2 VF_{t-1} = 1$	6.50	4.14	8.51	4.63	11.91	6.77	7.23	11.44	6.09
8	$VF_t = 2 VF_{t-1} = 0$	3.22	2.19	4.06	2.18	4.98	2.91	3.57	5.90	2.97
9	(6)–(7)	11.86**	10.44**	12.73**	10.24**	13.55**	12.76**	10.96**	12.18**	12.36**
10	(7)–(8)	3.28**	1.95**	4.45**	2.45**	6.93**	3.86**	3.66**	5.54**	3.12**
11	(9) as a % of (4)	28.2%	23.3%	31.8%	28.9%	35.4%	30.0%	26.7%	29.4%	29.1%
12	(10) as a % of (5)	30.5%	20.1%	38.3%	41.6%	37.7%	33.3%	29.4%	53.6%	29.9%
13	$\rho = \sigma_u^2 / (\sigma_u^2 + 1)$	0.290**	0.320**	0.261**	0.166**	0.308**	0.300**	0.287**	0.264**	0.284**

Main entries in rows (9) and (10) are unstandardized marginal effects. Entries in row (13) are the estimates of the intra-class correlation coefficients. The models all include the control variables presented in Table 1 as well as a series of regional and year effects. The models also include the time means of all the time-varying control variables. Asterisks indicate significant coefficients: \*\* $p < 0.01$

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