

# **Personality and Politics**

The Direct and Indirect Associations between the Five Factor Model and Political Attitudes

By

Bert N. Bakker

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Department of Political Science and Public Management

University of Southern Denmark

Supervised by Robert Klemmensen (SDU) and Rune Slothuus (Aarhus University)

## Table of Contents

Acknowledgments.....	6
1. Introduction.....	9
1.1. Research Question and Contribution.....	9
1.2. The Structure of Political Attitudes.....	13
1.3. Top-down and Bottom-up Approaches to Attitude Formation.....	14
1.4. The Five Factor Model of Personality.....	19
1.4.1. Development of the Five Factor Model.....	19
1.4.2. Defining the FFM.....	21
1.4.3. Psychometric Characteristics of the FFM.....	24
1.4.4. Roots of the FFM.....	25
1.4.5. Critiques of Personality Psychology and the FFM.....	27
1.5. The Association between Personality and Politics.....	30
1.6. Direct and Moderated Effects of the FFM and Political Attitudes.....	35
1.6.1. Fine-grained Associations between Personality and Political Attitudes.....	36
1.6.2. Constraining Personality.....	38
1.6.3. Personality and Political Communication.....	41
1.6.4. Synthesis.....	44
1.7. Research Design.....	45
1.8. Structure of the Dissertation.....	50
2. Personality and Politics: Moving Beyond the FFM Traits.....	51
Abstract.....	51
2.1. Introduction.....	52
2.2. Five Factor Model and Political Attitudes.....	54
2.3. Method.....	65
2.4. Results.....	67
2.5. Discussion.....	74
3. Personality Traits, Income and Economic Attitudes.....	79
Abstract.....	79
3.1. Introduction.....	80
3.2. Personality Traits and Economic Attitudes.....	82

3.3.	Personality traits, Income and Economic Attitudes .....	85
3.4.	Personality, Income and Economic Attitudes across Cultural Contexts .....	88
3.5.	Methods and Analyses .....	88
3.6.	Results .....	91
3.6.1.	Danish sample .....	91
3.6.2.	US Sample .....	97
3.7.	Discussion .....	103
4.	Blowing in the wind? Openness to Experience and Political Persuasion .....	106
	Abstract .....	106
4.1.	Introduction.....	107
4.2.	Personality and Political Persuasion .....	109
4.3.	Message-Person Congruence in Political Persuasion.....	111
4.4.	Expectations .....	113
4.5.	Research Design .....	113
4.6.	Study 1: Framing Experiment .....	114
4.6.1.	Methods.....	114
4.6.2.	Results.....	117
4.6.3.	Conclusion.....	119
4.7.	Study 2: Counterargument Experiment .....	120
4.7.1.	Methods.....	120
4.7.2.	Results.....	123
4.7.3.	Conclusion.....	130
4.8.	Discussion .....	130
5.	Navigating the Numbers: How the Anchoring Heuristic, Ideology, Knowledge and Openness to Experience Shape Factual Beliefs.....	134
	Abstract .....	134
5.1.	Introduction.....	135
5.2.	Anchoring Heuristic and Factual Beliefs.....	137
5.3.	Political Ideology and Factual Beliefs .....	138
5.4.	Political Knowledge and Factual Beliefs .....	140
5.5.	Openness to Experience and Factual Beliefs .....	141

5.6. Methods .....	142
5.7. Results .....	144
5.8. Discussion .....	151
6. Conclusions and implications .....	154
6.1. What have we learned? .....	154
6.2. Limitations and Implications for Further Research .....	159
6.3. Broader implications .....	164
7. Summary (English) .....	166
8. Summary (Dansk).....	168
9. Curriculum Vitae Bert N. Bakker .....	170
References.....	172
Supplementary Material Chapter 2 .....	201
2. A – Descriptive Statistics .....	201
2. B – Item Wording 2010 and 2011 .....	202
2. C – Model Specifications (wave 2010) .....	206
Introduction .....	206
Openness to Experience 2010 .....	207
Conscientiousness 2010 .....	208
Neuroticism 2010 .....	209
Agreeableness 2010.....	210
Extraversion 2010 .....	211
2. D – Model Specifications (wave 2011).....	212
Openness to Experience 2011 .....	212
Conscientiousness 2011 .....	213
Neuroticism 2011 .....	214
Agreeableness 2011.....	214
Extraversion 2011 .....	216
Supplementary Material Chapter 3 .....	217
3. A – Overview studies.....	217
3. B – Sample Description Danish sample.....	219
3. C – Sample Description US Sample .....	225

3. D – Pairwise Interaction Models .....	227
Introduction .....	227
Danish sample.....	228
US sample .....	230
3. E – Education, Union Membership, and Religiosity.....	233
Introduction .....	233
Danish sample.....	233
US sample .....	236
3. F – Personal Income and Social Class Models in Danish sample .....	240
Personal income .....	240
Social Class.....	243
3. G – Tobit Models in US sample .....	248
3. H – Race X Personality Traits Interactions .....	251
3. I – Mediation Analyses .....	255
Danish sample.....	255
US sample .....	257
Supplementary Material Chapter 4 .....	258
4. A – Punitive Attitudes in Denmark and the Netherlands .....	258
4. B – Descriptive Statistics Framing-experiment .....	259
4. C – Additional Information LISS panel .....	262
4. D – Descriptive Statistics Counterargument Experiment .....	263
4. E – Controlling for Conscientiousness.....	267
Supplementary Material Chapter 5 .....	271
5. A – Sample Characteristics .....	271
5. B – Outliers Included in Analyses .....	279
5. C – Negative Binomial Regression.....	283
5. D – Other FFM Traits .....	286

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## **1. Introduction**

### **1.1. Research Question and Contribution**

In modern democracies, political attitudes, among other factors, influences vote choice (Carmines & Stimson, 1980; Key, 1966; Rabinowitz & Macdonald, 1989), and public policy (Erikson, MacKuen, & Stimson, 2002; Key, 1961). Hence, in order to explain part of the outcome and functioning of modern democracies, we need to how citizens' arrive at their political attitudes. An attitude can be defined as a "psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour" (Eagly & Chaiken, 1993, p. 1). Contrary to what is often assumed (Converse, 1964), citizens' attitudes are bundled in relatively coherent attitude dimensions (Feldman & Johnston, 2013; Treier & Hillygus, 2009). However, there is a great variation across citizens in their political attitudes. Where does this variation come from?

Traditionally, top-down approaches treated political attitudes as the product of cultural, social and environmental forces (Campbell, Converse, Miller, & Stokes, 1960, Chapter 7; Jennings, 1968). Early bottom-up approaches, however, theorized that psychological dispositions underlie political attitudes (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950; McClosky, 1958). Remarkably, except for McClosky's (1958; see also, Sniderman, 1975) work on the conservative personality, psychological dispositions have been mostly absent in explanations of variation in political attitudes by political scientists (see, Alford, Funk, & Hibbing, 2005, p. 154). One explanation for the absence of psychological dispositions in political science is that scholars lacked an overarching framework to theorize and test the associations between psychological dispositions and political attitudes (see, Mondak & Halperin, 2008, p. 336; Sniderman, 1975, p. 16). This situation changed with the introduction of the Five Factor Model (FFM) of personality which subsumes a wide variety

of psychological dispositions into a holistic framework that consists of five broad traits and a series of lower order facets (Costa & McCrae, 1992a, 1995).

In recent years, political science research has uncovered that the motives and needs rooted in citizens' FFM personality traits are associated with political attitudes (see, Gerber, Huber, Doherty, & Dowling, 2011a; Mondak & Halperin, 2008; Mondak, 2010). Despite this progress, the association between FFM traits, its lower order facets, and political attitudes requires further investigation (Gerber et al., 2011a, p. 271). Hence, I address the question: *to what extent are the FFM traits and facets directly and indirectly associated with political attitudes?* To be clear, this is too broad a research question to be answered exhaustively in a single dissertation. However, I have developed a theoretical model, presented in Figure 1.1, which addresses the direct and indirect associations between the FFM and political attitudes in three key areas. Here, I will briefly pre-view my contributions.

First, I assess the direct associations between the FFM and political attitudes (see Figure 1.1, number 2). I start here, as I observe that the existing theories predominantly treat political ideology as a one-dimensional construct ranging from liberalism to conservatism. However, ideology is better seen as a multidimensional construct. Moreover, FFM traits are often treated as one-dimensional constructs, whereas each FFM trait consists of six lower order facets that contain a lot of variation in itself. I theorize and test that there is a fine-grained pattern of associations between FFM traits, their lower order facets and different political attitude dimensions. In doing so, I expand bottom-up approaches that treated ideology and personality as one-dimensional constructs.

In the next step, I move beyond the direct associations between personality and political attitudes. Specifically, I theorize that the associations between FFM traits and political attitudes

are conditioned by socio-economic factors. I build upon the argument by Lane (1955, pp. 174–175) that psychological dispositions are associated with political attitudes as long as other factors, such as self-interest, do not constrain this association (see Figure 1.1, number 3). In doing so, I expand bottom-up approaches as I theorize that there are limits to which FFM traits are associated with political attitudes.

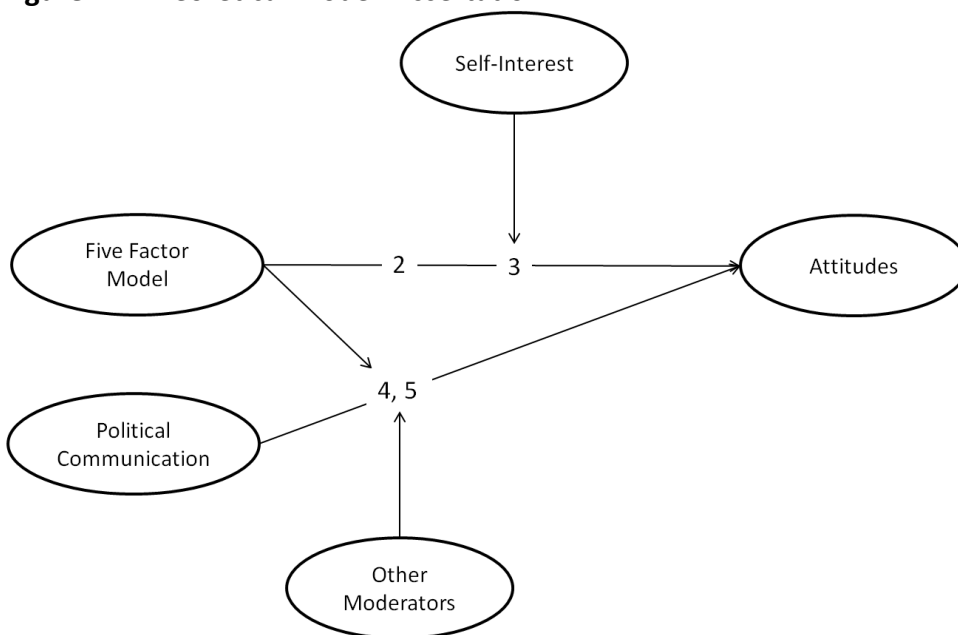
Finally, I theorize that the FFM traits moderate the effects of political communication (see Figure 1.1, number 4&5). Mondak (2010, p. 110) pointed this out as a potentially fruitful area of study (see for a recent example, Gerber, Huber, Doherty, Dowling, & Panagopoulos, 2013). A small body of research suggests that persuasion occurs when the content of the communicated message resonates with the motives rooted in a personality trait (Hirsh, Kang, & Bodenhausen, 2012; Kam & Simas, 2010; Lavine et al., 1999). However, FFM traits could also underlie a general tendency to be persuadable. Some studies have put forward that persons open to experience, who are curious and open-minded, tend to be more persuadable compared to those closed to experience (Gerber et al., 2013; Hibbing, Ritchie, & Anderson, 2011). I assess both perspectives in this dissertation. In order to compare the effects of personality against more commonly explored moderators of political communication, I also theorize that political ideology and political knowledge moderate the effects of political communication on political attitudes (Chong & Druckman, 2007, pp. 111–112). The contribution here is twofold: (1) I expand the moderating effects of FFM traits and (2) compare the effects of the FFM traits to the other moderators of political communication.

To summarize, in this dissertation I argue that there is a fine-grained and direct association between FFM traits and facets and political attitudes but this association can be constrained by socio-economic factors. Moreover, the effects of political communication on political attitudes are moderated by FFM traits, political ideology and political knowledge. Consequently, this

dissertation expands earlier models that have theorized how the FFM traits influence political attitudes (Gerber et al., 2011a; Gerber, Huber, Doherty, Dowling, & Ha, 2010; Jost, Federico, & Napier, 2009; Mondak, 2010).

In the remainder, I discuss the earlier literature addressing the relationship between psychological dispositions and political attitudes. This leads to the introduction of the FFM and a discussion of the relationship between personality and political attitudes. In doing so, I set the stage for my contribution. I will introduce the research questions guiding the remainder of the dissertation in the last section of this chapter.

**Figure 1.1** Theoretical Model Dissertation



*Note:* Numbers signal the chapters in the dissertation.

## **1.2. The Structure of Political Attitudes**

In recent years political scientists turned their attention to the question whether personality traits explain variation in political attitudes (Gerber et al., 2011a; Mondak, 2010, Chapter 5). However, a crucial assumption for associating personality traits with political attitudes is that there is some degree of coherence in the structure of political attitudes. Philip Converse (1964, 1970) argued that only a small part of the electorate has a coherent set of political attitudes, whereas the attitudes of most citizens are unstable and lack logical coherence. If citizens do not have at least some coherence in their political attitudes, it becomes difficult to theorize and demonstrate any association between personality traits and political attitudes. The foundations of Converse's (1964, 1970) argument have been criticized. Firstly, Converse's (1964, 1970) argument that citizens do not have stable attitudes was criticized for not taking measurement error into account. When accounting for measurement error, citizens tend to have relatively stable attitudes (Achen, 1975; Ansolabehere, Rodden, & Snyder, 2008; Feldman, 1989). Secondly, there is a considerable degree of coherence in the political attitudes of citizens (Conover & Feldman, 1981, 1984; Feldman & Johnston, 2013; Feldman, 1988; Goren, 2001, 2004). Hence, it is possible to study the psychological determinants of political attitudes.

A common approach to study political orientation of citizens is to let survey respondents place themselves on a single ideological dimension ranging from liberalism to conservatism (in the United States) or from left to right (in Europe; Mair, 2007). However, this operationalization of political orientation does not resonate with the of structure of political attitudes among the public in western democracies. For instance, Treier and Hillygus (2009, p. 680), discussing the structure of ideology among the American public "find that belief systems of the mass public are multidimensional." The multidimensional structure of political attitudes has been confirmed

repeatedly in western democracies (Achterberg & Houtman, 2009; Evans, Heath, & Lalljee, 1996; Feldman & Johnston, 2013; Van Der Brug & Van Spanje, 2009). Following these insights, I assume in this dissertation that political ideology consists of multiple attitude dimensions. However, conditional upon the chapter of the dissertation, I assess the structure of multiple attitudes dimensions (chapter 2), a specific attitude dimension (chapter 3) or a specific attitude (chapter 4 & 5).<sup>1</sup> Note that when I discuss differences in political attitudes, I make use of the terms liberal and conservative, whereby the term liberal equals left-wing political views and the term conservative equals right-wing political views.

### **1.3. Top-down and Bottom-up Approaches to Attitude Formation**

Traditionally, political science research has emphasized how cultural, social and environmental forces shape political attitudes and behaviours. Illustrative are the seminal studies stressing the importance of parental socialization in the formation of political attitudes and behaviours (Campbell et al., 1960, Chapter 7; Healy & Malhotra, 2013; Jennings, 1968; Niemi & Jennings, 1991). Moreover, a diverse set of theories explain how more immediate factors such as the media (Iyengar & Kinder, 1987), social networks (Huckfeldt, Beck, Dalton, & Levine, 1995; Huckfeldt & Sprague, 1995), economic evaluations (Fiorina, 1981), government performance (Tilley & Hobolt, 2011), life events (Hobbs, Christakis, & Fowler, 2014; Schmitt-Beck, Weick, & Christoph, 2006), and more mundane personal experiences such as weather conditions (Egan & Mullin, 2012) influences political attitudes and behaviours.<sup>2</sup>

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<sup>1</sup> Note that Chapter 5 actually assesses factual beliefs instead of attitudes.

<sup>2</sup> I primarily contribute to the study of political attitudes using a bottom-up approach. An extensive discussion of top-down approaches is therefore beyond the scope of the introductory chapter of the dissertation. This paragraph therefore provides only a very limited overview of top-down

Psychological dispositions have long been acknowledged as another important source of variation in political attitudes and behaviours (e.g., Adorno et al., 1950; Allport, 1954, Chapter 27; Eysenck, 1954; Lasswell, 1930). In their landmark study of the *Authoritarian Personality*, Adorno et al. (1950) addressed the question why the mass uncritically submits to authority and adheres to totalitarian regimes. Building upon Freudian insights, Adorno et al. (1950) theorized that a harsh parenting style fuels the development of a preference for authority. Moreover, the anxiety and anger caused by this harsh parenting style leads to a preference for an environment which is controlled and predictable, and a tendency to scape-goat and blame out-group members such as racial and ethnic minorities, moral deviants, and political dissidents.

Importantly, Adorno et al. (1950, p. 2) outlined in their study the goal of a broader research agenda as “ideologies have for different individuals different degrees of appeal, a matter that depends upon the individual’s needs.” For example, political scientist Herbert McClosky (1958, pp. 37–38) demonstrated that conservatives are more hostile, suspicious, rigid, compulsive, defensive, anxious, and guilt sensitive compared to liberals. This led McClosky (1958, p. 28) to conclude there is a “considerable regularity and coherence [...] in the relation between certain casts of character and personality on the one side and the degree of conservatism or liberalism expressed on the other.” Following the work by McClosky (1958; see also, Sniderman, 1975), “studies of personality [...] have been largely absent from political science” (Alford et al., 2005, p. 154; but see, Sniderman, 1975).

Despite this absence of personality in political science, research in psychology developed the association between psychological dispositions and political attitudes. Basically, two strands of

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approaches. Recent overviews provide state-of-the-art insights in the research on political socialization (Sears & Brown, 2013), political communication (Valentino & Nardis, 2013), and social networks (Huckfeldt, Mondak, Hayes, Pietryka, & Reilly, 2013).

research can be isolated. A first strand continued to study authoritarianism, whereas a second strand of research is more diverse and demonstrated how a plethora of psychological dispositions are related to political attitudes and behaviours. To setup the scene for my own theoretical contribution, I will first briefly discuss both strands of research.

Driven by the fierce critiques after the publication of the *Authoritarian Personality* (see, Brown, 1965), the conceptualization of authoritarianism has developed over time. Altemeyer (1981), introduced *Right-Wing Authoritarianism* (RWA), which operationalizes the preference for a society that increases uniformity and decreases diversity. According to Altemeyer (1981), RWA develops due to interactions with parents and peers as well as influences from school and the mass media.<sup>3</sup> RWA was measured with items that “express beliefs in coercive social control, in obedience and respect for existing authorities, and in conforming to traditional moral and religious norms and values” (Duckitt & Sibley, 2010, pp. 1863–1864). In line with the original conceptualization of authoritarianism by Adorno et al. (1950), RWA is theoretically and empirically confounded by conservatism which leads most scholars to argue that RWA is a social attitude dimension instead of stable psychological disposition (Duckitt & Sibley, 2010, p. 1863; Federico, Fisher, & Deason, 2011, p. 688; Feldman, 2003, p. 44; Stenner, 2005, p. 5).

Feldman and Stenner (Feldman & Stenner, 1997; Feldman, 2003; Stenner, 2005) provided an alternative conceptualization of authoritarianism that does distinguish the “general psychological predisposition to authoritarianism that is prior to politics from the specifically political consequences of authoritarianism” (Federico et al., 2011, p. 688). Specifically, Feldman and Stenner (1997) theorized that authoritarianism should be seen as a motive to maintain conformity

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<sup>3</sup> Note that the emphasis on parental socialization as the cause of the authoritarianism (Adorno et al., 1950; Altemeyer, 1981) suggests that the effects of environmental influences on political behavior are mediated through personality (Froman, 1961; Greenstein, 1965).



and uniformity independent from any specific political preferences. In order to avoid any methodological overlap between the measures of authoritarianism and conservatism, Feldman and Stenner (1997, p. 747) introduced a battery that taps into authoritarianism by asking respondents to express their child-rearing values. Using this conceptualization, authoritarianism has been related to political attitudes such as national pride, hostility towards other races and intolerance to homosexuality (Stenner, 2005), opposition to immigration and gay marriage (Kinder & Kam, 2009), support for the war on terror (Kam & Kinder, 2007), support for the Tea Party (Arceneaux & Nicholson, 2012), and opposition to European integration (Tillman, 2013).

Authoritarianism as conceptualized by Feldman and Stenner (1997) is only one of many psychological dispositions known in personality psychology. A wide variety of these psychological dispositions have been related to liberalism and conservatism (see for reviews, Carney, Jost, Gosling, & Potter, 2008; Jost, Glaser, Kruglanski, & Sulloway, 2003). For instance, early research documented a positive relationship between conservatism and intolerance to ambiguity (Frenkel-Brunswik, 1948). Later, liberals are sensation seekers (Levin & Schalmo, 1974; Looft, 1971) prefer cognitive complexity (Sidanius, 1978; Tetlock, 1983, 1984) but have a lower need for structure (Altemeyer, 1998; Webster & Stewart, 1973), and a lower need for cognitive closure (Chirumbolo, 2002; Kimmelmeier, 1997) compared to conservatives. The results of these studies align with the aforementioned argument by McClosky (1958, p. 28) that liberals and conservatives differ substantively on a host of psychological dispositions.

The wide variety of psychological dispositions used to study differences between liberals and conservatives reflects the severe disagreement about the nature and structure of human personality. The absence of psychological dispositions in the study of political attitudes by political science research could be explained by the lack of an overarching model of personality. An

overarching model of personality would allow scholars to build theories explaining the association between personality and political attitudes (see, Mondak, 2010, p. 24; Sibley & Duckitt, 2008, p. 251; Sniderman, 1975, p. 16). This situation changed with the introduction of the FFM in the 1980s (Costa & McCrae, 1992a, 1992b, 1995; Digman, 1990; Goldberg, 1992). The FFM isolates five higher order traits that each consists of six lower order facets. The FFM subsumes an impressive variety of psychological dispositions into a hierarchical structure of higher order traits and lower order facets (Bouchard & Loehlin, 2001, p. 246; Costa & McCrae, 1995; John, Naumann, & Soto, 2008, p. 115). The FFM traits Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism, and their lower facets, thereby offer a unique holistic model of personality that can be employed in the study of political attitudes.

Carney et al. (2008, p. 816) illustrated that the psychological dispositions previously related to political orientation, some of which I have discussed in this paragraph, can be subsumed into the FFM. In a series of studies, Carney et al. (2008, samples 1-6) report that conservatives are more conscientious, whereas liberals are more open to experience. Less consistent evidence supports the relationships between political orientation and the other three FFM traits. Yet, relating the previously studied psychological dispositions to the FFM, Carney et al. (2008) did not fully exploit the hierarchical structure of the FFM as they subsumed all earlier psychological dispositions into the five broad FFM traits. In this dissertation, I will demonstrate that the FFM offers a holistic model of personality and that the psychological dispositions previously associated with political orientation are represented in the lower order FFM facets (see chapter 2, Table 2.1). The FFM thereby offers a unique personality model to theorize at a fine-grained level to what extent psychological dispositions are associated with political attitudes (see also, Mondak & Halperin,

2008, pp. 335–336). This is one of the main reasons why I rely upon the FFM in this dissertation. In the next paragraph, I discuss the development of the FFM in detail.

## **1.4. The Five Factor Model of Personality**

### **1.4.1. Development of the Five Factor Model**

Personality psychology was defined by Allport (1937, p. 48) as the study of the “dynamic organization within the individual of those psychological systems that determine his unique adjustments to the environment” (see for a review, Cloninger, 2009). Personality is according to Mondak (2010, p. 6) “a multifaceted and enduring internal, or psychological, structure” usually consisting of multiple traits. Traits have been defined as “broad internal dimensions [...] that account for consistencies in behavior, thought, and feeling across situations and time” (McAdams & Olson, 2010, p. 519). Likewise, Costa and McCrae (1995, p. 25) defined traits as “multifaceted collections of specific cognitive, affective, and behavioral tendencies.”

A slightly different definition of personality traits was offered by Winter (2003, p. 115) who defined traits as “the public, observable element of personality” that “reflect[s] language of ‘first impressions’, the adjectives and adverbs of everyday language that we use to describe other people.” The definition of personality by Winter (2003) aligns closely with the *lexical hypothesis* in personality psychology (Allport & Odbert, 1936; Allport, 1937; Digman, 1990; Goldberg, 1990, 1993). The lexical hypothesis builds upon “the premise that natural languages such as English would have evolved terms for all fundamental individual differences” (McCrae & Costa, 1985a, p. 711). In a pioneering study using this lexical hypothesis, Allport and Odbert (1936; Allport, 1937) isolated 18,000 personality-descriptive terms from an English language dictionary. Next, Allport

and Odbert (1936) categorized these terms and created a list of terms they considered to be stable traits. Cattell (1943, 1945) used the list of personality-descriptive terms created by Allport and Odbert (1936) and, using a factor-analytic approach, derived 35 narrow bipolar traits. Fiske (1949) re-analyzed Cattell's traits and reported that personality is better represented using a five-factor structure. The superiority of the five-factor structure over other structures was confirmed by other scholars (see, Norman, 1963; Tupes & Christal, 1958, 1961).

In the 1980s the structure of personality psychology regained scholarly attention (see for a nuance, Wiggins & Trapnell, 1997). Building on insights from earlier research in the lexical tradition of personality (e.g., Fiske, 1949; Norman, 1963), scholars developed questionnaires with single-word person-adjectives in order to measure personality. Analysing the structure of personality, various studies reaffirmed that five-factors best resemble the structure of personality (Digman & Inouye, 1986; Digman, 1990; Goldberg, 1990, 1992, 1993). These five factors were coined the "big five" and labelled: Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Intellect (Digman, 1990; Goldberg, 1990, 1992, 1993).

Inspired by the research in the lexical tradition and the introduction of the five-factor structure, Costa and McCrae (Costa & McCrae, 1980, 1986; McCrae & Costa, 1983, 1985a, 1987) developed a model of personality that also consists of five traits.<sup>4</sup> They coined their model the Five Factor Model (FFM) and labelled the traits Openness (comparable to Goldberg's [1990, 1992] Intellect trait), Conscientiousness, Extraversion, Agreeableness and Neuroticism. The FFM differed on two points from the "big five" model (Goldberg, 1992). Firstly, contrary to the single-word person-adjectives used to measure the big five, McCrae and Costa (1985a, 1987) used short sentences to measure the FFM traits and facets. Secondly, the FFM is hierarchical whereby each

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<sup>4</sup> Costa and McCrae (1995, p. 23) use the word "domain" where I use the word "trait."

trait consists of six lower order facets (Costa & McCrae, 1995; McCrae & Costa, 1985a; McCrae, 2010, p. 59). These facets “represent the more closely co-varying elements within,” a trait are “of comparable scope and breath in content,” exhaust the FFM trait, and are “as consistent as possible with existing psychological constructs” (Costa & McCrae, 1995, p. 25). The decision to include six facets per trait was driven by the “need to make at least that many distinctions” (Costa & McCrae, 1995, pp. 26–27). Costa and McCrae (1995, pp. 26–27) also limited the number of facets to six as they realized that “more than six [facets] would soon lead to intellectual overload.” The facets have been shown to provide important information about fine-grained individual differences beyond the broad FFM trait level (Benet-Martínez et al., 2013; Paunonen & Ashton, 2001; Roberts, Bogg, Walton, Chernyshenko, & Stark, 2004; Roberts, Chernyshenko, Stark, & Goldberg, 2005). In chapter 2 and chapter 4 of this dissertation, I will demonstrate that the facets provide important information about the associations between personality and political attitudes. First, I will provide definitions of the FFM traits as the FFM will be my workhorse throughout the dissertation.

#### **1.4.2. Defining the FFM**

In this section I briefly discuss the definitions and broad characteristics of the FFM traits and facets (see table 1.1. for an overview). Openness to Experience consists of the lower order facets Aesthetics, Actions, Fantasy, Feelings, Ideas and Values (see Table 1.1, panel 1). Openness encapsulates a sensitivity for art, beauty, and feelings, a willingness to try new activities, a tendency to considering new ideas, and to re-evaluate one’s social and political beliefs (McCrae & Costa, 1997; McCrae & Sutin, 2009; McCrae, 1996). Generally, persons open to experience employ

artistic activities (McManus & Furnham, 2006), are spiritual, broad-minded, but also tend to be risk-taking (Ozer & Benet-Martínez, 2006, Table 1).

The trait Conscientiousness consists of the facets Achievement Striving, Competence, Deliberation, Dutifulness, Order and Self-Discipline (see, Table 1.1, panel 2). The trait operationalizes the tendency to resist impulses and plan, organize and carry out tasks (Costa & McCrae, 1992a). Generally, Conscientiousness is positively related with religiosity, risk aversion, satisfaction with the family, and success at work (Ozer & Benet-Martínez, 2006, Table 1).

Highly extravert individuals are outgoing and socially engaged and they tend to seek excitement (Costa & McCrae, 1992a). Extraversion consists of the facets Activity, Assertiveness, Gregariousness, Excitement Seeking, Positive Emotions and Warmth (see, Table 1.1, panel 3). Extraverts tend to be happy, have a rich social life, are satisfied with their relationship, and choose jobs which have a social component (Ozer & Benet-Martínez, 2006, Table 1).

Agreeableness consists of the facets Altruism, Compliance, Modesty, Straightforwardness, Trust, and Tender-Mindedness (see, Table 1.1, panel 4). The trait is characterized by modest, pro-social and altruistic behaviour (Costa and McCrae 1992). Generally, Agreeable citizens are more likely to volunteer (Carlo, Okun, Knight, & de Guzman, 2005) and avoid any sort of conflict (Park & Antonioni, 2007).

Lastly, the trait Neuroticism operationalizes the tendency to experience negative affect and insecurity. Neuroticism consists of the facets Anxiety, Anger, Depression, Impulsiveness, Self-consciousness, and Vulnerability (see, Table 1.1, panel 5). High scorers on Neuroticism tend to be less happy in personal life or in romantic relationships, and less successful at work compared to persons low on Neuroticism (Ozer & Benet-Martínez, 2006, Table 1).

**Table 1.1** Definitions of the FFM Traits and Facets

<b>Trait</b>	<b>Definition</b>
<b>Openness to Experience</b>	Having imaginative, curious and exploratory tendencies.
Actions	Willingness to try new activities and experiences.
Aesthetics	Appreciation of art and beauty.
Fantasy	Having a vivid imagination and a rich fantasy in life.
Feelings	Responsiveness towards own feelings and emotions.
Ideas	Open-mindedness and willingness to experience new ideas.
Values	Readiness to examine social, political and religious values.
<b>Conscientiousness</b>	Resist impulses and plan, organize and carry out tasks.
Achievement Striving	Drive for excellence.
Competence	Being capable, sensible, and accomplished.
Deliberation	Being cautious, thoughtful and structured.
Dutifulness	Adherence to standards of conduct and ethical principles.
Order	Tendency to keep the environment tidy and organized.
Self-Discipline	Tendency to continue task despite distractions.
<b>Extraversion</b>	Outgoing, sociable behaviour, and seek excitement.
Activity	High levels of energy and the need to be busy.
Assertiveness	Tendency to be dominant and lead groups.
Gregariousness	Preference for social interactions.
Excitement Seeking	Stimulation and excitement seeking behaviour.
Positive Emotions	Experiences of joy, happiness and excitement.
Warmth	Affectionate and friendly behaviour.
<b>Agreeableness</b>	Modest, altruistic behaviour, which is pro-social and cooperative.
Altruism	Concerns for others and a sense of selflessness.
Compliance	Tendency to defer to others instead of start fighting or express anger.
Modesty	Not being preoccupied with yourself.
Straightforwardness	Directness and frankness in dealing with other people.
Tender-Mindedness	Attitudes of sympathy and concern for others.
Trust	Tendency to attribute benevolent intents to other people.
<b>Neuroticism</b>	Experience of negative affect such as fear, anger, guilt.
Anger Hostility	Tendency to experience anger, frustration and bitterness.
Anxiety	Tendency to experience fears and phobias.
Depression	Tendency to experience depressive affect.
Impulsiveness	Inability to control cravings and urges.
Self-consciousness	Tendency to experience shame and embarrassment.
Vulnerability	Capacity to deal with stress.

### **1.4.3. Psychometric Characteristics of the FFM**

I have argued that one of the advantages of the FFM is the fact that it subsumes a variety of individual differences into the hierarchical traits (see also, Carney et al., 2008, Table 1). Looking at definitions at the different facets in Table 1.1, one quickly realizes the wide variety of specific psychological dispositions these lower order facets encapsulate. Not only theoretically, but also empirically, studies demonstrated that traits as defined in other personality models such the 16 PF (Cattell, 1956), Eysenck Personality Questionnaire Eysenck's (Eysenck & Eysenck, 1985; Eysenck, 1991), and the Interpersonal Circumplex model (Wiggins, 1979) can be subsumed into the FFM traits (see, Bouchard & Loehlin, 2001, p. 246; DeYoung, Weisberg, Quilty, & Peterson, 2013; John et al., 2008, p. 115; McCrae & Costa, 1985b, 1987, 1989; Piedmont, McCrae, & Costa, 1991). For instance, the traits Extraversion and Neuroticism of Eysenck's Personality Questionnaire are represented in the traits Extraversion and Neuroticism of the FFM, while Psychoticism is represented in the traits Agreeableness and Conscientiousness (Aluja, García, & García, 2002; Digman, 1997, p. 1251; Goldberg, 1993; Markon, Krueger, & Watson, 2005; McCrae & Costa, 1985b, 1987).<sup>5</sup>

Aside from subsuming a wide variety of psychological dispositions into one holistic model of personality, the FFM offers impressive psychometric characteristics. For instance, there is a considerable degree of correspondence between self-ratings and observer-ratings of the FFM traits (Connolly, Kavanagh, & Viswesvaran, 2007; Costa & McCrae, 1986, 1988; McCrae et al., 2004). The five-factor structure has also been widely replicated in representative of samples of populations of various countries (Costa & McCrae, 1986; Costa et al., 2007; Löckenhoff et al.,

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<sup>5</sup> Note that Eysenck (1991, 1992), in defense of his own three factor model of personality, argued that the traits Agreeableness and Conscientiousness subsume into the Psychoticism dimension.



2008). Moreover, the five-factor structure replicated across cultures (Allik & McCrae, 2004; Costa & McCrae, 1986; Costa et al., 2007; Löckenhoff et al., 2008; McCrae & Allik, 2002; McCrae & Terracciano, 2005; Schmitt, Allik, McCrae, & Benet-Martinez, 2007).<sup>6</sup>

The FFM traits also seem to be relatively stable in adulthood (Costa & McCrae, 1988, 1992a; Haan, Millsap, & Hartka, 1986; Roberts & DelVecchio, 2000; Soldz & Vaillant, 1999). Most changes happen in adolescence and early adulthood (before age 30) and then again, at least for some traits, in late adulthood/old age (Cobb-Clark & Schurer, 2012; Costa & McCrae, 1988; Hopwood et al., 2011; McCrae, Martin, & Costa, 2005; Roberts, Walton, & Viechtbauer, 2006). Generally, Neuroticism and Extraversion decrease as people become older, Agreeableness and Conscientiousness increase over time, whereas Openness tends to increase in younger years and stabilizes afterwards.

Extensive empirical investigation demonstrates that the FFM traits and facets are reliable and valid measures of personality and tend to be relatively stable over time. However, aside from the psychometric characteristics, extant research addressed the roots of the FFM.

#### **1.4.4. Roots of the FFM**

The developmental origins, neurological correlates, and genetic component of the FFM traits have been studied systematically. Here, I provide a brief overview of the major insights. Starting with the developmental origin of the FFM, a number of studies have reported that the FFM traits can be observed in childhood (Eisenberg, Duckworth, Spinrad, & Valiente, 2012; Markey, Markey, &

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<sup>6</sup> Some studies failed to replicate the five-factor structure as in China (Cheung et al., 2001), India (Singh, Misra, & de Raad, 2013), and an indigenous society in the Amazon (Gurven, von Rueden, Massenkoff, Kaplan, & Vie, 2013). For the research employed in this dissertation, it is important to note that the five-factor structure has been widely replicated in the western world.

Tinsley, 2004; Shiner & Caspi, 2003; Shiner & Masten, 2012; Shiner, 2005). Moreover, personality assessed in childhood is correlated with personality in adulthood (Edmonds, Goldberg, Hampson, & Barckley, 2013; Measelle, John, Ablow, Cowan, & Cowan, 2005, p. 91). For instance, Hampson and Goldberg (2006) report modest associations between childhood personality traits and adult personality traits assessed 40 years later.

DeYoung and Gray (DeYoung & Gray, 2009; DeYoung, 2010a, 2010b) formulated a biological theory of the FFM by defining its neurological substrates. Testing this theory, DeYoung et al. (2010) recruited 116 participants who filled out an extensive battery known to measure the FFM traits and facets (e.g., NEO-PI-R; Costa & McCrae, 1992a) and associated the FFM scores with the observed differences in the volume of specific brain regions. The results confirmed that individual differences in the FFM traits correlate with individual differences in local brain volume. For instance, Extraversion was associated with the medial orbitofrontal cortex which is the brain region associated with the reward of stimuli (DeYoung et al., 2010; Omura, Constable, & Canli, 2005). Various other studies have reported associations between brain regions and FFM traits but it is beyond the scope of this chapter to discuss all brain regions related to the FFM (see for recent examples, Adelstein et al., 2011; Gardini, Cloninger, & Venneri, 2009; Kapogiannis, Sutin, Davatzikos, Costa, & Resnick, 2013; Kunisato et al., 2011; Sampaio, Soares, Coutinho, Sousa, & Gonçalves, 2013). Important for this dissertation, the theory by DeYoung and Gray (DeYoung & Gray, 2009; DeYoung, 2010b) and the additional empirical evidence signals that FFM has got a neurological basis. This implies that the FFM traits are, at least till a certain extent, hardwired.

The FFM traits are also partly heritable (Bouchard & Loehlin, 2001; Bouchard, 1994; Jang, McCrae, Angleitner, Riemann, & Livesley, 1998; McGue, Bacon, & Lykken, 1993; Riemann, Angleitner, & Strelau, 1997; Yamagata et al., 2006). Recent studies documented specific genetic

effects (particular loci/Single Nucleotide Polymorphisms) related to FFM traits. However, due to pleiotropy and multiplicative, but small, individual genetic effects, it is questionable if the search for specific genetic effects will be successful in predicting much of the variance in personality traits (see, Amin et al., 2013; de Moor et al., 2012). At best, more research is needed before conclusions can be drawn about the more fine-grained genetic effects (Benjamin et al., 2012; Chabris et al., 2012). Taking this limitation into account, it is important to remember that the FFM traits do have a sizeable heritable component.

To summarize, the FFM can be traced back to childhood, have neurological correlates, and are partly heritable. Nonetheless, the FFM has not been universally accepted. I will discuss some of the most prominent critiques, before I discuss how and to what extent the FFM relates to political attitudes.

#### **1.4.5. Critiques of Personality Psychology and the FFM**

Perhaps the most fundamental critique directed towards the FFM was formulated by Block (1995, 2010, p. 22) who stated that the FFM lacks a theoretical justification and only provides “a factor-analysis based empirical taxonomy” of personality (see also, Mischel & Shoda, 1994; Mischel, 1968; Pervin, 1994). Likewise, Deary (2009, p. 104) argues that the empirical characteristics of the FFM “are impressive” but these characteristics do not answer the question “what the traits look like under the skin.” Block (1995, 2010) and Deary (2009) correctly pointed out that the FFM is the result of an extensive investigation of the psychometric structure of personality as discussed in paragraph 1.4.3. However, Deary (2009) and Block (1995, 2010) might not fully appreciate the achieved insights in the developmental origins (Edmonds et al., 2013; Hampson & Goldberg, 2006), neurological correlates (DeYoung & Gray, 2009; DeYoung et al., 2010), and heritability

(Yamagata et al., 2006) of the FFM. These developments signal that the FFM capture deep-seated individual differences in personality reaching far beyond the empirical taxonomy of personality.

The five-factor structure of the FFM has also been criticized for not capturing all aspects of human personality (Funder, 2001; Norem, 2010; Saucier & Goldberg, 1998). Perhaps the most important aspect of personality not represented in the FFM are the antisocial personality traits (Block, 2010). For instance, the Dark Triad traits Narcissism, Machiavellianism and Psychopathy are only to a modest extent represented in the FFM (Jakobwitz & Egan, 2006; Paulhus & Williams, 2002; Vernon, Villani, Vickers, & Harris, 2008; Veselka, Schermer, & Vernon, 2012). At this point, scholars are well advised to think carefully when designing their study whether they have specific interests in the Dark Triad traits and include these into their study if they have specific expectations about these traits. In this dissertation, I set out to study the association of the FFM traits and facets with political attitudes. At this point, I do not have strong expectations about the associations between the anti-social traits and political attitudes, so I do not take these traits into account in my dissertation.<sup>7</sup>

Aside from the anti-social personality traits, some scholars proposed to add one or two traits to the FFM. For instance, the HEXACO model expands the FFM by adding a sixth factor, namely Honesty which operationalizes “sincerity, unassumingness, and fairness versus slyness/deceit, pretentiousness, and greed” (Ashton et al., 2006, p. 853; see also, Ashton & Lee, 2001, 2005; Ashton et al., 2004; de Vries, Lee, & Ashton, 2008).<sup>8</sup> Others, have argued that the traits Negative Valence and Positive Valence should be added to the FFM (Almagor, Waller, & Tellegen, 1995;

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<sup>7</sup> Future research could theorize to what extent anti-social traits are associated with political attitudes.

<sup>8</sup> The FFM traits Agreeableness and Neuroticism are also differently operationalized in the HEXACO-model

Benet-Martinez & Waller, 1997). The addition of one or more traits to the FFM, is up to this point primarily a topic of debate in personality psychology. Future research will have to demonstrate whether the addition of traits to the FFM improves the understanding of the outcomes of interest (see for notable examples, Bourdage, Lee, Ashton, & Perry, 2007; Sibley, Harding, Perry, Asbrock, & Duckitt, 2010). In this dissertation, I stick to the FFM as the added value of additional traits above and beyond the FFM is, at least at this point, unclear.

Instead of adding more traits to the FFM, others have claimed that the FFM traits subsume into two meta-traits (DeYoung, Peterson, & Higgins, 2002; DeYoung, 2006; Digman, 1997; van der Linden, te Nijenhuis, & Bakker, 2010). The factor alpha operationalizes *stability* and consists of the traits Neuroticism, Agreeableness and Conscientiousness, whereas the factor beta, or *plasticity*, consists of the factors Openness and Extraversion. The meta-traits alpha and beta could then even be subsumed into one general factor of personality (Just, 2011; Musek, 2007; Rushton & Irwing, 2008). The higher-order traits could provide an insights in the structure of personality, however, further research will have to show the added value of alternative high-order factor structures in explaining human behavior (Benet-Martínez et al., 2013, p. 16).

A last criticism targets the inclusion of six facets per FFM trait. Firstly, the facets have been subject to less empirical verification compared to the FFM traits (see, Costa, McCrae, & Dye, 1991, pp. 888–889; McCrae, 2009, p. 157). Secondly, some of the facets load on different FFM traits. Costa and McCrae (1995, p. 26) acknowledge both problems but assign each facet to one trait because they prefer coherence in the FFM. Regardless of these critiques, the facets structure has been widely replicated (Costa et al., 2007; Löckenhoff et al., 2008; McCrae, 2009). Moreover, facets have shown to be important predictors of a variety of individual behaviours over and above

the FFM traits (Paunonen & Ashton, 2001; Roberts et al., 2005). In chapter 2 of this dissertation I will demonstrate that some but not all facets are associated with political attitudes.

The here discussed critiques illustrates that the FFM is not universally accepted. It is important to realize that the goal of personality psychology is to quantify the structure of personality (Allport, 1937). Therefore it is not surprising that the FFM is critically assessed and that alternative structures are proposed. The alternative models that have been put forward might in the long run prove to be models that capture personality better than. Here, I stick to the FFM as this is the model of personality that has received the most theoretical and empirical validation up to this point. In the next section, I will discuss the arguments used to link the FFM traits to political attitudes. In doing so, I can embed my contribution within the existing literature.

### **1.5. The Association between Personality and Politics**

The earlier discussed characteristics of the FFM (see paragraph 1.4.3 and 1.4.4) have made the FFM a widely-used model of personality to study a wide variety of human behaviours (see for reviews, Ozer & Benet-Martínez, 2006; Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). Recently, the FFM has also received attention in the field of economics (see, Almlund, Duckworth, Heckman, & Kautz, 2011; Becker, Deckers, Dohmen, Falk, & Kosse, 2012; Borghans, Duckworth, Heckman, & ter Weel, 2008) and in political science research (see, Gerber et al., 2011a; Mondak & Halperin, 2008; Mondak, 2010). Various theories explain the role of personality in politics. I will discuss theories that have focused upon the association between personality and vote choice (Caprara & Zimbardo, 2004), ideology (Jost et al., 2009, 2003), and political attitudes (Duckitt & Sibley, 2010; Duckitt, 2001; McClosky, 1958). By discussing the current state-of-the-art, I provide the set-up for the arguments developed in this dissertation.

Caprara and Zimbardo (2004, p. 590) theorize that a “powerful *congruency principle*” (emphasis in original) between the personality of citizens and their political leaders explains why citizens support certain parties and candidates. Caprara and colleagues illustrated the congruence principle in two lines of research. Firstly, voters tend to perceive a high degree of similarity between their own personality traits and the personality traits of their preferred candidates (Caprara, Barbaranelli, & Zimbardo, 2002; Roets & Van Hiel, 2009; Vecchione, Castro, & Caprara, 2011) and accordingly vote for these candidates (Caprara, Vecchione, Barbaranelli, & Fraley, 2007). The congruence principle is also seen in the actual similarities between the personality traits of politicians and their voters. Specifically, Caprara and colleagues recruited Italian politicians who also filled out a personality inventory (Caprara, Barbaranelli, Consiglio, Picconi, & Zimbardo, 2003; Caprara, Francescato, Mebane, Sorace, & Vecchione, 2010). Right-wing politicians scored higher on Conscientiousness and Extraversion compared to left-wing politicians. Importantly, this pattern was mirrored among the Italian public. Right-wing voters scored higher on Conscientiousness and Extraversion compared to left-wing voters. To summarize, the congruence principle is supported as voters believe to (and actually do) share characteristics with the politicians they prefer. The argument developed by Caprara and Zimbardo (2004) provides a first insight in the importance of personality in determining political preferences. Next, I turn to theoretical models that directly explain the association between personality and political ideology.

The “elective affinities” model (Jost et al., 2009, p. 308; Jost, 2009) offers an overarching theory of the association between psychological dispositions and political ideology. Jost et al. (2009) theorize that political ideology is the product of a top-down (e.g., elite-driven) and bottom-up (e.g., psychological) process. Political scientists have mostly addressed how top-down processes affect political ideology (Converse, 1964; Sniderman & Bullock, 2004; Zaller & Feldman,

1992). Building upon these insights, Jost et al. (2009, p. 316) explained that in the top-down process “the content associated with different ideological positions is absorbed” by citizens “who take cues from those elites who share their partisan or ideological orientations.”

The bottom-up process is, however, equally important in shaping political ideology (Jost et al., 2009; Jost, 2009). Specifically, a citizen will adopt the ideological position that provides the best fit with the motives and needs rooted in her psychological dispositions. The association between psychological dispositions should therefore be seen as a match between the content of the political issues and the motives and goals rooted in the psychological dispositions of a citizen. In a meta-analysis, Jost, Glaser, Kruglanski and Sulloway (2003) reported that conservatives resist changes and minimize insecurity as is signalled by the positive associations between conservatism and measures of fearfulness, rigidity, conventionality, self-control and orderliness. Liberals do not have this resistance to change and do not need to reduce insecurity to the same extent as signalled by the positive associations with open-mindedness, imaginativeness, impulsiveness and excitement seeking. The work by Jost et al. (2003) illustrates the bottom-up process outlined in the elective affinities model (Jost et al., 2009; Jost, 2009) and demonstrates that personality traits are directly related to political ideology.

Two longitudinal studies confirm the importance of bottom-up processes in shaping political ideology (Block & Block, 2006; Fraley, Griffin, Belsky, & Roisman, 2012). In a longitudinal study, Block and Block (2006) let nursery school teachers score the personality of children at age 3. The same participants were surveyed 20 years later in early adulthood (age 23) and in this wave participants were asked to report their political ideology. Children that were anxious, fearful, sensitive to guilt, and rigid in childhood were more likely to be self-reported conservatives in adulthood. Children that were expressive, autonomous, and self-reliant in childhood were more



likely to be self-reported liberals in adulthood. Fraley et al. (2012) reported the results of a study with a comparable design but relied upon a larger and more representative sample of participants living in the United States. In this study childhood personality was measured at age 3.5, whereas political ideology was measured at age 18. Like Block and Block (2006), Fraley et al. (2012) conclude that liberal adults were more active and restless in childhood, whereas conservative adults were more fearful in childhood. The studies by Block and Block (2006) and Fraley et al. (2012) clearly show that even early childhood personality is related to political ideology in adulthood.

Studies assessing the association between the FFM traits and broad ideology dimensions reached similar conclusions as discussed above. Generally, the literature suggests that Openness is positively associated with liberalism, whereas Conscientiousness is positively associated with conservatism (Carney et al., 2008; Mondak & Halperin, 2008; Riemann, Grubich, Hempel, Mergl, & Richter, 1993; Trapnell, 1994; van Hiel, Kossowska, & Mervielde, 2000; Van Hiel, Mervielde, & De Fruyt, 2004; Van Hiel & Mervielde, 2004). Carney et al. (2008, p. 825) explain that this pattern suggests that “left-wingers are more motivated by creativity, curiosity, and diversity of experience, whereas right-wingers are more motivated by self-control, norm attainment, and rule following” The association between political attitudes and the other three FFM traits, Neuroticism, Agreeableness and Extraversion, are less consistent. Neuroticism seems to be positively correlated with liberalism (e.g., left-wing attitudes; Carney et al., 2008; Mondak & Halperin, 2008; Riemann et al., 1993). The results for Agreeableness are mixed, as some studies suggest that Agreeableness correlates with liberalism (Riemann et al., 1993; Van Hiel, Mervielde, et al., 2004; Van Hiel & Mervielde, 2004; von Collani & Grumm, 2009; Zettler & Hilbig, 2010) but other studies have reported a positive correlation with conservatism (Carney et al., 2008; Leeson & Heaven, 1999).

Lastly, Extraversion is sometimes positively correlated with conservatism (Mondak & Halperin, 2008; Riemann et al., 1993).

The here discussed models using a bottom-up approach tend to focus upon one-dimensional operationalization of liberalism-conservatism. The Dual-Process Motivational (DPM) model argues that bottom-up and top-down processes influence political attitudes (Duckitt & Sibley, 2010; Duckitt, 2001). The DPM treats RWA and Social Dominance Orientation (SDO) as attitude dimensions, whereby RWA taps into social conservatism and SDO into economic conservatism (see, Duckitt & Sibley, 2010, pp. 1863–1866). The DPM thereby provides an insight in the association between personality and political attitudes. Duckitt and Sibley (2010, p. 1867) state that “the two sets of motivational goals or values expressed in RWA and SDO are made chronically salient for individuals by their social worldview beliefs, which are, in turn, products of their personalities and of their socialization in and exposure to particular social environments.” In this line, Duckitt and Sibley (Duckitt & Sibley, 2010; Duckitt, 2001; Sibley & Duckitt, 2008) reported low Openness and high Conscientiousness combined with environmental influences leads to RWA. Likewise, inequality and competition combined with low level of Agreeableness leads to SDO (see for a schematic overview, Duckitt & Sibley, 2010, fig. 1). The combination of psychological dispositions and environmental factors affecting political attitudes (e.g., RWA and SDO) as formulated by Sibley and Duckitt (Duckitt & Sibley, 2010; Duckitt, 2001) is thereby largely in line with the elective affinities model outlined by Jost et al. (2009).

Earlier theories also offer support for the argument that citizens align their political attitudes with the motives and needs rooted in their personality traits (Campbell et al., 1960; McClosky, 1958). Campbell et al. (1960, p. 511) theorized that personality could relate to political attitudes as the “issue alternatives may mesh directly and clearly with underlying needs” rooted in the

personality of citizens. Unfortunately, Campbell et al. (1960) did not provide an empirical test of their argument. McClosky (1958) did theorize and test how and to what extent psychological dispositions are associated with political attitudes. In his study, McClosky (1958, p. 40) explained the associations between psychological dispositions and political attitudes by stating that people align their perceptions of the world with their “own inner feelings,” whereby an “individual creates a set of perceptions that express, or that are consonant with, his own needs and impulses.”

To summarize, the different arguments used to explain the association between personality and vote choice, political ideology, and political attitudes suggest that citizens tend to gravitate towards political attitudes which resonate with the motives rooted in their psychological dispositions. These theories are the starting point of the argument developed in this dissertation.

### **1.6. Direct and Moderated Effects of the FFM and Political Attitudes**

In this dissertation I build upon the earlier theories using a bottom-up approach to study vote choice (Caprara & Zimbardo, 2004), ideology (Block & Block, 2006; Fraley et al., 2012; Jost et al., 2009, 2003), and political attitudes (Duckitt & Sibley, 2010; Duckitt, 2001; McClosky, 1958). The previously discussed theoretical models explaining how personality influences political attitudes have acknowledged that the assessment of fine-grained direct and indirect associations between the FFM and political attitudes will be fruitful (Jost et al., 2009; Mondak & Halperin, 2008; Mondak, 2010). However, the theoretical development and empirical assessment of these arguments has been limited. I will theorize and test to what extent the FFM traits and facets are directly and indirectly associated with political attitudes, and to what extent the FFM traits moderate the effects of political communication and thereby indirectly influence political

attitudes. In the remainder of this paragraph, I will discuss the specific arguments developed in this dissertation in more detail.

### **1.6.1. Fine-grained Associations between Personality and Political Attitudes**

The current literature addressing the direct association between FFM traits and political attitudes has two limitations. First, research often relies upon one-dimensional measures of political orientation ranging from liberalism to conservatism (Jost et al., 2003; Sibley, Osborne, & Duckitt, 2012). Studies assessing the structure of political ideology often fail to find evidence for a one-dimensional structure of political ideology in most western countries. Instead, a multi-dimensional operationalization consisting of a social attitude dimension and an economic attitude dimension seems to better capture the structure of ideology (Achterberg & Houtman, 2009; Conover & Feldman, 1981; Evans et al., 1996; Feldman & Johnston, 2013; Feldman, 1988; Treier & Hillygus, 2009; Van Der Brug & Van Spanje, 2009). The social attitude dimension encapsulates issues such as abortion, women's rights, environmental issues, and gay rights, whereas the economic attitude dimension encapsulates issues such as redistribution, social welfare, and spending preferences. The social and economic attitude dimension are often correlated but, even among more sophisticated citizens, the correlation is modest which suggests that the social and economic attitude dimensions are two separate attitudinal constructs (Achterberg & Houtman, 2009; Feldman & Johnston, 2013; Treier & Hillygus, 2009; Van Der Brug & Van Spanje, 2009).

The association between psychological dispositions and the different political attitude dimensions has been addressed by some studies. Outside the FFM framework dogmatism, authoritarianism, the need for cognition, the need for structure, and the need to evaluate are consistently stronger associated with the social attitude dimension compared to the economic

attitude dimension (Crowson, 2009; Feldman & Johnston, 2013). Within the FFM framework, a different pattern emerges. Openness is associated with social liberalism, whereas Conscientiousness is associated with social conservatism (Gerber et al., 2011a; Gerber, Huber, et al., 2010; Sibley & Duckitt, 2008). However, Openness, as well as Agreeableness are positively associated with economic liberalism (Gerber et al., 2011, 2010; Riemann et al., 1993; Van Hiel & Mervielde, 2004, study 2; but see Carney et al., 2008, sample 6; Leeson & Heaven, 1999). Moreover, Neuroticism is positively associated with economic attitudes (Gerber et al., 2011a; Gerber, Huber, et al., 2010; Verhulst, Eaves, & Hatemi, 2012), whereas Conscientiousness sometimes correlates with economic conservatism (Gerber et al., 2011, 2010; Leeson & Heaven, 1999; but see Carney et al., 2008; Riemann, Grubich, Hempel, Mergl, & Richter, 1993; Van Hiel & Mervielde, 2004, Study 2). To summarize, studies theorizing and assessing the association between attitude dimensions and personality traits seems to uncover differential patterns of relationships between the FFM traits and the attitude dimensions. Further research is warranted as evidence is limited and the reported patterns are not consistent across studies.

A second gap in the literature concerns the theoretical interpretation and operationalization of the FFM. In most studies FFM traits are treated as homogeneous dimensions (see for exceptions, Butler, 2000; Carney et al., 2008; Gerber et al., 2011a; Van Hiel & Mervielde, 2004), although each FFM trait consists of six lower order facets (Costa & McCrae, 1995; McCrae & Costa, 1985a). Remarkably, the explanation of the association between FFM traits and political attitudes often centres on one of these lower order facets, whereas the other facets of a trait are not emphasized. So far most studies in political science relied upon brief measures of personality. Necessarily brief measures operationalizing personality with one, two, or three items cannot capture all six facets of a trait (Credé, Harms, Niehorster, & Gaye-Valentine, 2012; Gerber et al., 2011a; Gosling, Rentfrow,

& Swann, 2003). The literature thereby evokes language at the facet level but predominantly relies upon brief measures that cannot isolate these facets. Consequently, it is unknown whether the justification of one facet over another provides an accurate description of the association between the FFM and political attitudes. In the first section of the dissertation I will take up both lacunas in this literature and answer research question 1:

*RQ 1. To what extent are the social and economic attitude dimensions associated with FFM traits and facets?*

### **1.6.2. Constraining Personality**

The first research question establishes the fine-grained pattern of direct associations between FFM traits, their facets, and different political attitude dimensions. However, direct associations between political attitudes and personality are only one way in which FFM traits could be connected to political attitudes. Mondak and Halperin (2008, p. 339) pointed out that “full attention to the possible political significance of differences in traits will require expanded exploration of possible indirect effects” (see also, De Neve, 2013; Gerber, Huber, et al., 2010; Mondak, 2010; Redlawsk & Tolbert, 2012). One possibility is to study the “situations in which personality variables may operate in concert with other factors such as demographic attributes” (Mondak, 2010, p. 110; see also, Jost et al., 2009, p. 329; Redlawsk & Tolbert, 2012).

The literature has seen some preliminary attempts to theorize and test to what extent the association between personality and political attitudes can be affected by other factors. For instance, race (Gerber, Huber, et al., 2010) and early childhood experiences (De Neve, 2013) moderate the association between FFM and political attitudes. Likewise, Redlawsk and Tolbert (2012, p. 1) theorized that “personality may be conditioned by the legal environment and social

context in which people live.” Specifically, Redlawsk and Tolbert (2012) demonstrated that Openness is only associated with positive attitudes towards gays in states that have anti-gay policies. Importantly, the study by Redlawsk and Tolbert (2012) illustrates the effects of personality traits can be constrained by other factors.

The starting point of my theoretical argument is the work by Robert Lane (1955, p. 174) who theorized that there are “circumstances limiting the influence of personality” in political behaviour. Lane (1955) explained that the importance of personality is “guided by perceived economic, social, or political self-interest” (Lane, 1955, p. 174). Specifically, the association between personality traits and political attitudes are expected to be inhibited when it would hurt the immediate interests of an individual (Lane, 1955, p. 175). Lane (1955) illustrated his argument in a study assessing the relationship between authoritarianism and support for the welfare state. Specifically, lower educated citizens were driven by material self-interest and expressed positive attitudes towards the welfare state, whereas their authoritarianism was unrelated to the expressed welfare state attitudes. Higher educated citizens are not driven by an immediate self-interest to promote the welfare state and, as such, are able to match the needs and motives rooted in their authoritarianism with their welfare state attitudes.

I build upon the argument by Lane (1955) and theorize that the association between the FFM traits and economic attitudes can be constrained by material self-interest. Across western countries, citizens with lower income tend to support redistribution, tax cuts, unemployment insurance, and public health care, whereas higher income earners oppose these liberal economic policies (Daniel Doherty, Gerber, & Green, 2006; Page, Bartels, & Seawright, 2013; Rehm, Hacker, & Schlesinger, 2012; Rehm, 2009, 2010; Sears & Citrin, 1985; Sears & Funk, 1991, pp. 32–39; Sears, Lau, Tyler, & Allen, 1980). An explanation why income would constrain the association between

personality traits and economic attitudes is offered by studies assessing the effects of scarcity upon individuals. Kraus, Piff, Mendoza-Denton, Rheinschmidt, and Keltner (2012) theorized that lower income earners tend to be driven by their immediate needs, whereas higher income earners rely upon their internal motives. This argument was supported by others who demonstrated that the experience of scarcity, due to a low income, severely limits the ability to think in abstract terms and tend to lead people to prioritize their most immediate needs (Mani, Mullainathan, Shafir, & Zhao, 2013a, 2013b; Shah, Mullainathan, & Shafir, 2012). These studies suggest that lower income earners will be more preoccupied by their immediate needs and this should constrain the effects of personality on economic attitudes.

In the second research question, I argue that material self-interest moderates the effects of personality on political attitudes as expressed in research question 2. I expect that low income earners will be driven by their direct needs for liberal economic policies such as redistribution and a strong welfare state *independent* of their personality traits. As income increases and scarcity decreases, personality traits will be associated with economic attitudes. In doing so, I bring together the aforementioned suggestion that indirect effects of personality should be studied (Mondak, 2010) and the insights that material self-interest could cause citizens to prioritize upon their most immediate needs.

*RQ 2. Does material self-interest constrain the association between FFM traits and economic attitudes?*



### **1.6.3. Personality and Political Communication**

In the previous section, I have addressed how material factors constrain the association between personality and political attitudes. Mondak (2010, p. 110) also pointed out that further research should assess how personality interact with “features of the political environment” (see for similar arguments outside the domain of politics, Denissen & Penke, 2008, p. 1298; Hampson, 2012, p. 319). In the third section, I theorize how FFM traits moderate the effect of political communication.

Previous research has shown that citizens are not blank receivers of political communication. For instance, political knowledge (Kam, 2005; Zaller, 1992) as well as beliefs and values (Brewer, 2001; Nelson & Garst, 2005; Peffley & Hurwitz, 2007; Sniderman & Theriault, 2004) moderate the effectiveness of political communication. The tendency for personality to moderate the effects of political communication is not very consistent. Outside the FFM framework, two competing theoretical insights explain how psychological dispositions influence the effects of political communication. First, psychological dispositions could entail a general tendency to be more or less persuadable (Eagly, 1981; Gastil, Black, & Moscovitz, 2008; McGuire, 1968). Alternatively, psychological dispositions moderate the effectiveness of political communication, whereby persuasive appeals that resonate with the motives rooted in a personality are more effective in persuading a person (Kam & Simas, 2010; Lavine et al., 1999; Lavine, Lodge, & Freitas, 2005). This latter model is thereby at par with bottom-up and top-down approach as they signal that citizens tend to be most likely to be persuaded when the message (e.g., top-down) is in line with the motives and needs rooted in their dispositions (e.g., bottom-up).

These two competing perspectives are reflected in arguments that have been used to explain the importance of the FFM trait Openness to Experience in political communication. Specifically,

persons low on Openness lack an interest in art, act predictable, prefer familiarity, are closed-minded, lack curiosity, and are less willing to reconsider new ideas (McCrae, 1987, 1996). The open-mindedness and curiosity rooted in Openness could explain why some studies report that persons high on Openness are more influenced by political information and easier to persuade (Gerber et al., 2013, p. 696; Hibbing et al., 2011, p. 619; Nisbet, Hart, Myers, & Ellithorpe, 2013, p. 778). Other studies have pointed out that FFM personality traits only moderate the effectiveness of political communication when the message resonates with the goals and motives rooted in the personality trait (Hirsh et al., 2012; Wheeler, Petty, & Bizer, 2005). The FFM trait Openness to Experience is the FFM trait that allows me to test whether citizens are general persuadable (e.g., high Openness) as well as the alternative expectation that persuasion occurs when the content of the message resonates with the needs rooted in the trait. Therefore, I specifically assess the role of this personality trait in in the third research question which is defined as follows:

*RQ 3. Does Openness underlie a general persuasibility or does persuasion only occur when political communication resonates with motives rooted in the trait?*

As discussed in research question 3, citizens are not mere receivers of information provided by elites. Citizens are especially likely to be responsive to political communication when they are in situations of judgmental uncertainty. For instance, judgemental uncertainty occurs when citizens try to estimate the size of migrant populations (Nadeau, Niemi, & Levine, 1993; Wong, 2007), when they are asked to form opinions about abstract issues such as global warming (Egan & Mullin, 2012) or complex economic issues (Johnston & Wronski, 2013). In these situations citizens will turn to cues in their environment in order to arrive at their attitudes.

I turn to research addressing the formation of factual beliefs because the psychological research on the anchoring heuristic has provided important insights in citizens' tendency to rely upon cues in the environment (e.g., anchors) to arrive at factual beliefs (Tversky & Kahneman, 1974). In a seminal study, Tversky and Kahneman (1974) theorized that in situations of judgmental uncertainty, people anchor themselves on information which comes to mind or is provided by other people. Specifically, Tversky and Kahneman (1974) demonstrated that the anchoring effect occurs when citizens' factual beliefs are biased towards the initially presented value. The anchoring heuristic has been shown to be a very powerful heuristic and has been replicated across countries and issues (Furnham & Boo, 2011; Klein et al., 2014). However, there is a lot of variation in the tendency to rely upon anchors in situations of judgmental uncertainty but there is limited understanding of the factors that could explain the variation in the tendency to rely upon these anchors (Furnham, Boo, & McClelland, 2012).

In research question 3, I have theorized that personality, and specifically the FFM trait Openness, could be an important moderator of political communication. In research question 4, I again study how the FFM trait Openness relates to the tendency to rely upon political communication. However, in order to provide a complete overview of the moderators of political communication, research question 4 also includes two important moderators of political communication, namely political ideology and political knowledge. I expect that in situations of judgmental uncertainty, participants high on Openness are more likely to rely upon the cues in order to arrive at their factual beliefs as they are more curious and tend to rely upon this new information (McElroy & Dowd, 2007). However, political communication is often aligned with prior political attitudes and partisan affinities (Bartels, 2002; Berinsky, 2007; Sniderman & Theriault, 2004). Therefore, I theorize that ideology is an individual difference which moderates the

tendency to rely upon political communication. Moreover, politically knowledgeable citizens rely less upon cues in the political world (Kam, 2005; Zaller, 1992). I expect that knowledgeable citizens less likely to be influenced by political communication. These arguments are captured in research question 4.

*RQ 4. Do the FFM trait Openness to Experience, political ideology and political knowledge moderate the effectiveness of political communication?*

#### **1.6.4. Synthesis**

To summarize, the four arguments developed in this dissertation jointly provide an answer to the central question of this dissertation *to what extent are the FFM traits and facets directly and indirectly associated with political attitudes*. I improve earlier models that assess the association between personality traits and political ideology (Jost et al., 2009), and political attitudes (Duckitt & Sibley, 2010; Gerber, Huber, et al., 2010; McClosky, 1958) in three key areas. Firstly, these models have not explicitly theorized and assessed the fine-grained associations between the FFM traits, their lower order facets, and political attitudes. Secondly, limited attention has been given to the idea that factors such as material self-interest could moderate the association between personality and political attitudes. Thirdly, limited attention has been paid to the moderating effect of the FFM on political communication. In the next paragraph, I briefly discuss the designs of the studies conducted as part of this dissertation.

## **1.7. Research Design**

In this dissertation I answer the four research questions in four consecutive chapters. I report the results of five independent samples conducted in three countries (Denmark, The Netherlands and The United States). Table 2.1 summarizes the characteristics of the different studies employed in this dissertation. Note that the research designs will be spelled out in greater detail in the specific chapters.

In chapter 2, I theorize and test how the FFM traits and facets are associated with the social and economic attitude dimension (Feldman & Johnston, 2013; Treier & Hillygus, 2009; Van Der Brug & Van Spanje, 2009). Specifically, I analyse a representative sample of the Danish population (N=3,612; see, Dinesen, Nørgaard, & Klemmensen, 2014). In this sample, psychological dispositions are measured using the Danish version of the 60-item NEO PI-R Short Version (Skovdahl-Hansen, Mortensen, & Schiøtz, 2004). Each trait is measured using 12 items, and each facet is measured using two items. The social attitude dimension is measured using seven items, and the economic attitude dimension is measured using two items. The results are analysed using a series of confirmatory factor analyses. I correlate each personality trait and its lower order facets with the social and economic attitude dimensions. I internally replicate the conclusions reached in chapter 2, as participants in the Danish sample were invited to participate in a second wave of the survey in the fall of 2011 (N=1,972). Personality was not measured in 2011 but the social and economic attitude dimensions were included in the survey. Consequently, I could internally replicate the associations between the political attitude dimensions and the FFM traits and facets.

In chapter 3, I theorize and test whether material self-interest conditions the relationship between personality and economic attitudes. I answer this question using studies conducted in Denmark and the United States (US). Denmark and the US are most different systems when it

comes to the organization of their welfare state, the size of the government and a host of other variables (see for a similar logic, Klemmensen et al., 2012). The most different system design allows me to generalize the conclusions drawn in this study to less different systems (Przeworski & Teune, 1970; Slater & Ziblatt, 2013). The data employed in the Danish sample is based upon the same data-set that was used in chapter 2. In the US sample, I rely upon the Common Content of the Cooperative Congressional Election Study 2009 (N=5,457, Ansolabehere, 2009).

The measures of economic attitudes in both studies tap into the same latent construct by asking about spending and taxation preferences in the United States and redistribution of income in Denmark (see, Feldman & Johnston, 2013, p. 21; Gerber, Huber, et al., 2010, pp. 113–114; Treier & Hillygus, 2009, Table 1). The employed measures of personality differed across the two studies. In the US sample, personality was measured using the Ten-Item Personality Inventory (TIPI; Gosling et al., 2003) and in the Danish sample personality was measured using the 60-item NEO PI-R Short Version (Skovdahl-Hansen et al., 2004). Extant research has indicated that the TIPI is a valid measure of the broad FFM traits (Ehrhart et al., 2009; Gosling et al., 2003; Rammstedt & John, 2007). Consequently, I theorize and test how the broad FFM traits are associated with economic liberalism. I do not move beyond the traits as I want to compare the associations between the FFM traits and economic attitudes across political contexts. I test my argument by assessing the results of a series of OLS regression models whereby I interact the FFM traits with household income (Brambor, Clark, & Golder, 2006; Kam & Franzese, 2007).

In the fourth chapter I theorize and test to what extent FFM traits affect political communication. I report the results of two between-subjects survey experiments (Arceneaux, 2010; McDermott, 2002; Morton & Williams, 2010; Mutz, 2011; Sniderman, 2011). In these survey

experiments I test whether the resonance between the motives and needs rooted in FFM traits and the content of the persuasive appeal cause people to change attitudes.

The first study is a framing experiment (N=428) in which participants are randomly assigned to different information about conditional sentences, upon receiving this information participants were asked to express their punitive attitudes (van Gelder, Aarten, Lamet, & van der Laan, 2011). Openness was measured using ten items (Goldberg, 1992; Goldberg et al., 2006). In the second experiment, conducted in Denmark (N=2,289), I have designed and conducted a counterargument experiment (see also, Gibson, 1998; Petersen, Slothuus, Stubager, & Togeby, 2010). Specifically, participants first expressed their opinion towards the harsh punishment of violent crimes. Afterwards, participants were randomly assigned to a counterargument intended to change attitudes towards more or less support for harsh punishment of violent crimes. Openness was measured using 12 items from the NEO PI-R Short Version (Skovdahl-Hansen et al., 2004). I test in this study whether counterarguments that resonate with high levels of Openness are more persuasive compared counterarguments that do not resonate with Openness.

A common critique of experimental research is the threat to external validity because of lacking representativeness of the sample (McDermott, 2002; Morton & Williams, 2010). In chapter 4 this problem is limited as both experiments were conducted in samples fairly representative of the respective populations. Specifically, the first experiment was conducted in the Dutch Longitudinal Internet panel Studies for Social Science (LISS panel) which is based upon a probability sample of the Dutch population (Binswanger, Schunk, & Toepoel, 2013; Scherpenzeel & Das, 2010). The second study was conducted in a large randomly drawn sample of Danish adults.

Lastly, chapter 5 reports the results of an anchoring experiment (Tversky & Kahneman, 1974). Research on the anchoring heuristic explains that in situations of judgmental uncertainty, people

anchor themselves on information which comes to mind or is provided by other people. Tversky and Kahneman (1974) illustrated this by asking participants to estimate the percentage of African countries with membership of the United Nations. Before expressing their factual beliefs, participants were shown a wheel of fortune which randomly stopped at a number between zero and hundred. If the wheel of fortune stopped at a high number, participants estimated a higher percentage of African countries with membership of the United Nations compared to the participants for whom the wheel stopped at a low number.

The anchoring experiment was conducted in a sample of young Danish adults (N=1,186). In this study participants received a low or a high anchor after which participants were asked to express their beliefs about the number of non-Western immigrants living in Denmark. Openness to Experience was measured using the similar personality battery employed in chapter 2 and 3 (see, Skovdahl-Hansen et al., 2004). Political knowledge was measured using a 12-item political knowledge battery, whereas political ideology is measured with a six-item attitude inventory. Using a series of OLS regression analyses, I test whether the tendency to rely upon the anchor to arrive at factual beliefs about the number of immigrants is conditional upon Openness, political knowledge and/or political ideology.



**Table 2.1** Overview of the Research Design

<b>Sample</b>	<b>N</b>	<b>Design</b>	<b>Independent Variable</b>	<b>Dependent Variable</b>
<b>2</b> Denmark (wave 2010)	N=3,612	Observational (2 waves)	NEO PI-R Short Version (#60)	Economic and social attitude dimensions
Denmark (wave 2011a)	N=1,972	Observational	Not measured	Economic and social attitude dimensions
<b>3</b> Denmark (wave 2010)	N=1,904	Observational	NEO PI-R Short Version (#60)	Economic attitude dimension
US (2009)	N=5,457	Observational	TIPI (#10)	Economic attitude dimension
<b>4</b> The Netherlands (2010)	N=428	Experiment	Big Five Inventory (#50)	Attitudes towards punishment of criminals
Denmark (2013)	N =2,289	Experiment	NEO PI-R Short Version (#60)	Change in Attitudes towards punishment of Criminals
<b>5</b> Denmark (2011b)	N=1,186	Experiment ( <i>Anchoring</i> )	Openness to Experience (#12), Ideology (#6), Political Knowledge (#12)	Expressed factual beliefs of number of non-western immigrants

Note: # signals the number of items used to measure the independent variable

## **1.8. Structure of the Dissertation**

This dissertation proceeds as follows. Chapter 2 discusses the fine-grained relationship between personality and political attitudes. In chapter 3, I assess the direct association between personality and economic attitudes and test to what extent material self-interest moderates this association. Chapter 4 focuses upon the extent to which personality moderates political communication. Lastly, chapter 5 addresses the importance of personality as well as ideology and political knowledge in moderating the effects of political communication. In chapter 6, I report the overarching conclusions and discuss the limitations as well as some suggestions for further research.

## 2. Personality and Politics: Moving Beyond the FFM Traits

### Abstract<sup>9</sup>

The Five Factor Model personality traits have recently been associated with political attitudes. I observe two gaps in this literature. First, ideology is often operationalized as a one-dimensional construct. Second, brief measures of personality are employed, whereas specific facets are emphasized to explain the connection with political attitudes. The current literature lacks a conceptual understanding of whether the traits or their lower order facets are associated with political attitudes. Here, I move beyond the traits and address the correlations between the FFM facets with social and economic attitude dimensions. I have observed three patterns of relationships. First, all facets of Conscientiousness are correlated with the specific attitude dimensions meaning that interpretations should focus upon the trait. Alternatively, specific facets of Agreeableness and Extraversion are correlated with political attitudes. Thirdly, the attitude dimension conditions whether the higher order trait or specific facets of Openness and Neuroticism are correlated with political attitudes. Generally, this study demonstrates that scholars need to be careful interpreting the relationship between personality and political attitudes at the trait or facet level as this differs across FFM traits and attitude dimensions.

**Keywords:** Political Attitudes, Five Factor Model, Facets

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<sup>9</sup> This chapter was written specifically for the dissertation. The data of the 2010 wave used in this chapter is included in a working paper with different model specifications of the independent and dependent variables. This working paper assesses the association between the FFM and political attitudes in multiple countries (Verhulst, Bakker & Hatemi, 2013).

## 2.1. Introduction

In recent years, some political science research turned attention to the association between political attitudes and the Five Factor Model (FFM) personality traits Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism (Gerber et al., 2011a; Mondak & Halperin, 2008; Mondak, 2010). The FFM is a holistic model of personality which integrates a wide variety of individual differences into five hierarchical traits (Costa & McCrae, 1992a, 1992b, 1995; Digman, 1990; Goldberg, 1992). Liberals are generally more open to new experiences, while conservatives are more conscientious (see, Sibley et al., 2012). Less evidence suggests that liberals are more neurotic (Gerber, Huber, et al., 2010; Verhulst, Eaves, et al., 2012) and agreeable (Alford & Hibbing, 2007; Riemann et al., 1993; von Collani & Grumm, 2009), whereas conservatives are more extraverted (Gerber, Huber, et al., 2010; Riemann et al., 1993).

The current literature is marked by two gaps. First, different theories demonstrate that citizens adopt political attitudes which resonate with the needs and motives rooted in their personality (Gerber, Huber, et al., 2010; Jost et al., 2009; Mondak, 2010; Sibley & Duckitt, 2008). In these theories, the FFM traits are treated as one-dimensional constructs. Each FFM trait consists, however, of six lower order facets. These facets represent specific aspects of a higher order trait that are closely related to “existing psychological constructs” (Costa & McCrae, 1995, p. 25). Empirical studies often employ brief measures of the FFM that necessarily cannot measure all six facets of each trait (Credé et al., 2012, p. 876; Gerber et al., 2011a, pp. 282–283; Gosling et al., 2003, pp. 523–524). Remarkably, in order to explain the relationships between FFM personality traits and political attitudes scholars often emphasize some but not all of the FFM facets to justify the association between the FFM and political attitudes. For instance, explaining the relationship between Openness and liberalism scholars argue that liberals tend “to embrace new ideas”

(Mondak 2010, p 130), “respond positively to unconventional and complex stimuli” (Gerber et al., 2011a, p. 269; Gerber, Huber, et al., 2010, p. 116), but are not dogmatic (Mondak & Halperin, 2008, p. 355; Riemann et al., 1993, p. 314). These studies thereby stress the facet Ideas, which encapsulates a tendency to be open-minded and to consider new and unconventional ideas (McCrae, 1996). Studies that directly measure the FFM facets report that liberals are indeed open to ideas, but liberals also score higher on Openness facets that capture imaginativeness, sensitivity to feelings and aesthetics, and the willingness to try new activities (Carney et al., 2008; McCrae, 1996; Trapnell, 1994; van Hiel et al., 2000; Van Hiel & Mervielde, 2004). This example demonstrates that the selective emphasis of the Ideas facet provides an incomplete impression of the association between Openness and liberalism.

Second, relating personality to political ideology, studies often assume that political ideology is a one-dimensional construct (Sibley et al., 2012, p. 675). Studies assessing the structure of political ideology often fail to find evidence for a one-dimensional structure of political ideology. Instead, a multi-dimensional operationalization consisting of a social and an economic attitude dimension seems to better capture the structure of ideology (Feldman & Johnston, 2013; Treier & Hillygus, 2009). Only a few studies operationalized ideology as a multi-dimensional construct. Preliminary evidence suggests that the FFM traits are to different degrees and regularities correlated with these social and economic attitude dimensions (Carney et al., 2008; Gerber et al., 2011a; Riemann et al., 1993; Sibley & Duckitt, 2008; Van Hiel & Mervielde, 2004).

To summarize, at this point it is uncertain whether the associations between the FFM and political attitudes should be interpreted by addressing the higher order traits or some of the lower order facets. Moreover, the strength and direction of the association between the FFM and political attitudes might be conditional upon the attitude dimensions. Addressing these gaps, I set

out and explore the extent to which the FFM traits and facets are related to social and economic attitude dimensions.

## **2.2. Five Factor Model and Political Attitudes**

The associations between the FFM traits and one-dimensional measures of political orientation have been addressed in a large number of studies (see for a recent meta-analysis, Sibley et al., 2012). Only a few studies included the lower order facets and primarily centred upon the facets of Openness (Jost et al., 2007; van Hiel et al., 2000; Van Hiel & Mervielde, 2004) or a selection of the FFM facets (Gerber et al., 2011a; Peterson & Palmer, 2013; Trapnell, 1994; Zettler & Hilbig, 2010).<sup>10</sup> In order to arrive at testable expectations, I turn to research outside the FFM framework. Specifically, I have selected those psychological dispositions that (1) closely resemble the FFM facets and (2) have been related to political attitudes. In doing so, I can formulate expectations which facets are expected to be correlated with political attitudes and which facets might not be correlated with political attitudes.<sup>11</sup> The remainder of this paragraph discusses the expected relationships between the FFM facets and political attitudes, whereby Table 2.1 (Openness and Conscientiousness) and Table 2.2 (Neuroticism, Agreeableness and Extraversion) provides a summary of this literature review.

I start the discussion with Openness, which encapsulates a preference for art and beauty, curiosity, sensitivity to feelings, willingness to try new activities, consider new ideas, and to re-evaluate one's social and political beliefs (McCrae & Sutin, 2009; McCrae, 1996). Table 2.1 (panel

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<sup>10</sup> So far, only Butler (2000, N=76 psychology students) and Carney et al. (2008, N=85 students) included all 30 FFM facets in convenience samples.

<sup>11</sup> Table 1.1 in chapter 1 of this dissertation provides a summary of the definitions of five FFM traits and their lower order facets.

1) clearly signals that Openness is associated with liberal political attitudes. Justifying the relationship between Openness and liberalism studies often highlight that liberals tend “to embrace new ideas” (Mondak, 2010, p. 130), “respond positively to unconventional and complex stimuli” (Gerber et al., 2011a, p. 269; Gerber, Huber, et al., 2010, p. 116), are “drawn to novelty and diversity” (Carney et al., 2008, p. 834), but are “not rigid” (Mondak, 2010, p. 52) nor dogmatic (Mondak & Halperin, 2008, p. 355; Riemann et al., 1993, p. 314). These interpretations resemble the Ideas facet, which captures an individual’s open-mindedness and willingness to entertain novel ideas (McCrae & Sutin, 2009). Studies inside and outside the FFM support that there is a positive relationship between the Ideas facet and political liberalism (Butler, 2000; Carney et al., 2008; Gerber et al., 2011; Trapnell, 1994; but see Peterson & Palmer, 2013; van Hiel et al., 2000, sample 1).

The facets Actions, Aesthetics, Fantasy, Feelings and Values have all been correlated with political attitudes (see Table 2.1, column 2-3). Remarkably, these facets are rarely emphasized when scholars explain the connection between Openness and liberalism. For instance, the Values facet was specifically designed to assess an individual’s readiness to examine social, political, and religious values (McCrae, 1996, pp. 325–327) and is accordingly correlated with liberalism (Peterson & Palmer, 2013; Trapnell, 1994; van Hiel et al., 2000; Van Hiel & Mervielde, 2004). The willingness to try new activities or experiences is captured in the facet Actions (Costa & McCrae, 1992a) and this facet is also consistently related to liberalism (see Table 2.1, column 2 & 4). The facet Aesthetics encapsulates the appreciation of art and beauty has been related to liberalism (see Table 2.1, column 2). Wilson, Ausman and Mathews (1973) explained that liberals have a preference for complexity and this preference for complexity expresses itself in a sensitivity for art. Two facets received somewhat less support inside and outside the FFM framework. The

Fantasy facet measures an individual's imaginativeness. Some but not all studies document that there is a relationship between Fantasy and liberalism (see Table 2.1, panel 1), while research outside the FFM framework suggests that liberals are more imaginative compared to conservatives (Feather, 1984; Tomkins, 1963). The Feelings facet captures the individuals' responsiveness towards its feelings and emotions. Some studies have put forward that liberals are guided by their feelings (Tomkins, 1963) but associations between the FFM facet Feelings and ideology are not as consistent as some of the previously discussed Openness facets (see Table 2.1, panel 1). To summarize, most facets of Openness are to a considerable degree related to liberalism. Consequently, the emphasis on the facet Ideas provides an incomplete insight in the association between Openness and liberalism.

Conscientiousness captures the tendency to organize, plan and carry out task, and to resist impulses (Costa et al., 1991). This trait is generally correlated with conservatism and is often explained by stressing that conservatives prefer to "adhere to social norms and rules" (Gerber et al., 2010, p. 115; see also, Carney et al., 2008, p. 625; Gerber et al., 2011, p. 269; Riemann et al., 1993, p. 320).<sup>12</sup> This explanation corresponds with the facet Dutifulness that encapsulates the adherence to standards of conduct and ethical principles (Costa et al., 1991, p. 889). Empirical evidence supporting the relationship between the FFM facet Dutifulness and conservatism is absent within the FFM framework, however, outside the FFM framework, a substantive number of studies suggest that conservatives are more dutiful (see Table 2.1, panel 2).

Aside from Dutifulness, other facets of Conscientiousness have been emphasized to explain the association between Conscientiousness and conservatism. For instance, Gerber et al. (2011a,

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<sup>12</sup> Note that association between Conscientiousness and economic conservatism is less consistent (Gerber et al., 2011, 2010; Leeson & Heaven, 1999; but see Carney et al., 2008; Riemann et al., 1993; Sibley & Duckitt, 2008; Van Hiel & Mervielde, 2004, Study 2).



p. 269) point out that high scorers on Conscientiousness like “achievement striving,” which is supported by research inside and outside the FFM framework (Block & Block, 2006; Carney et al., 2008, sample 1; Feather, 1984). Alternatively, Mondak and colleagues (Mondak & Halperin, 2008, p. 343; 2010, p. 54) argue that conservatives have “a preference for caution in policymaking and a presumption in favour of the status quo” which stresses the Deliberation facet that encapsulates the tendency to be cautious, thoughtful and structured but there is no empirical evidence that conservatives are score high on deliberation (see Table 2.1, panel 2).

The facets Competence, Order, and Self-Discipline are rarely emphasized when justifying the association between the FFM trait Conscientiousness and conservatism. Research inside and outside the FFM framework, summarized in Table 2.1 (panel 2), signals that conservatives have higher levels of Self-Discipline (Gerber et al., 2011a), and prefer Order (Carney et al., 2008), whereas the facet Competence receives less support outside the FFM framework.

To summarize, I expect that, with the exception of the facet Deliberation, all Conscientiousness facets are associated with conservatism. Consequently, emphasizing a specific facet provides an incomplete impression of the association between Conscientiousness and political attitudes.

**Table 2.1** Overview of the Associations between Political Attitudes and the Trait and Facets of *Openness and Conscientiousness*

FFM Traits and Facets	Inside FFM			Psychological Dispositions outside the FFM
	<i>Liberalism-conservatism</i>	<i>Social attitudes</i>	<i>Economic Attitudes</i>	
<b>Openness to Experience</b>	1, 3, 4, 5, 6, 7, 8, 10, 11, 13, 16, 17, 18, 19, 21, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33, 34, 76	12, 24, 29, 33, 78	12, 29, 33, 78	
Actions	1, 2, 3, 4, 5, 7, 9, 10	8		Experience seeking <sup>53</sup> , New experiences <sup>55</sup> , Novelty <sup>66</sup> , Change seeking <sup>50</sup> , Variety <sup>45</sup> , Wide interests <sup>68</sup> , Inflexible <sup>41</sup> , Need for structure <sup>62</sup> , Norms of manner <sup>36</sup>
Aesthetics	3, 4, 6, 7, 9, 10, 11, 76	8, 11	8, 11	Aesthetics <sup>40, 68, 81</sup> , Beauty <sup>59</sup> , Creativity <sup>37, 59, 81</sup> , Complexity <sup>77</sup> , Conventional music <sup>43</sup>
Fantasy	1, 2, 3, 4, 7, 9	8		Daydream <sup>70</sup> , Imaginative <sup>45, 55, 59</sup> , introspectiveness <sup>40</sup>
Feelings	4, 6, 7, 9, 10	8		Feelings <sup>45, 68</sup> , Sensitive <sup>35, 48, 70</sup>
Ideas	1, 3, 4, 6, 8, 9, 10, 2, 76	8, 11		Cognitive complexity <sup>57, 58, 68</sup> , Curiosity <sup>79</sup> , Intellect <sup>40, 68</sup> , Novelty <sup>45</sup> , Open-mindedness <sup>35, 55, 65, 67</sup> , Unconventional <sup>81</sup> , Value intellect <sup>68</sup> , Derogation of reason and intellect <sup>41</sup> , Intolerance of ambiguity <sup>37, 38, 40, 49, 54, 68</sup> , Narrow mindedness <sup>43</sup> , Need for closure <sup>66, 67</sup> , Need for structure <sup>62</sup> , Rigid <sup>40, 41, 46, 49</sup>
Values	1, 2, 3, 4, 5, 6, 7, 9, 10, 76	8	8	Broad-minded <sup>59</sup> , Freedom <sup>59</sup> , Openness to values <sup>61</sup> , Accept authority <sup>61</sup> , Closed-minded <sup>38, 60, 66</sup> , Dogmatic <sup>43, 51</sup> , Honour tradition <sup>61</sup> , Intolerant <sup>37, 41, 46, 48, 51, 56, 63, 64, 66</sup>
<b>Conscientiousness</b>	7, 11, 13, 16, 17, 18, 22, 23, 25, 26, 27, 29, 30, 32, 33, 34, 76	29, 33, 78	15, 29, 33	
Achievement Striving	10			Competative <sup>68</sup> , Ambitious <sup>59</sup> , Norm attainment <sup>45</sup>
Competence				High standards <sup>68</sup> , Accomplished <sup>59</sup> , Responsible <sup>55, 59</sup>
Deliberation				
Dutifulness				Conformity <sup>46, 51</sup> , Conventionalism <sup>38, 43, 46, 51, 55, 56, 60, 63, 64</sup> , Desire for structure <sup>62</sup> , Dutiful <sup>65</sup> , Moralistic <sup>69</sup> , Need for the familiar <sup>54</sup> , Norms of morality <sup>36</sup> , Norms of tradition <sup>36</sup> , Obedient <sup>46, 56, 59, 63, 64</sup> , Obliging <sup>55</sup> , Persistent <sup>35, 36, 38, 48</sup> , Submission <sup>37, 43, 56</sup>
Order	10			Clean <sup>36, 42, 48</sup> , Neat <sup>68</sup> , Ordered <sup>36, 41, 42, 44, 47, 51, 65, 66</sup> , Orderliness <sup>45</sup> , Tidy <sup>41</sup>
Self-Discipline	11	11	11	Attentional focussing <sup>73</sup> , Controlled <sup>47, 68</sup> , Disciplined <sup>37, 45, 51, 65</sup> , Goal directed <sup>55</sup> , Obligatory <sup>55</sup> , Self-Controlled <sup>55, 59</sup>

**Note:** Black numbers indicate a positive correlation with liberalism. Red numbers indicate a negative association with conservatism. An insignificant association between a FFM trait or facet with liberalism-conservatism is signalled by the fact that the number of the specific study is not mentioned in the specific panel of column 2

**FFM Facets:** <sup>1</sup>Trapnell (1994); <sup>2</sup>Van Hiel, Kossowska, & Mervielde (2000, sample 1); <sup>3</sup>Van Hiel et al. (2000, sample 2); <sup>4</sup>Van Hiel et al. (2000, sample 3); <sup>5</sup>Van Hiel et al. (2000, sample 4); <sup>6</sup>Butler (2000, study 2); <sup>7</sup>Van Hiel & Mervielde (2004, study 1); <sup>8</sup>Van Hiel & Mervielde (2004, study 2); <sup>9</sup>Jost et al. (2007, study 1); <sup>10</sup>Carney, Jost, Gosling, & Potter (2008, sample 1); <sup>11</sup>Gerber, Huber, Doherty, & Dowling (2011, CCAP sample); <sup>76</sup>Peterson and Palmer (2013).

**FFM Traits:** <sup>12</sup>Riemann, Grubich, Hemple, Mergl, & Richter (1993); <sup>13</sup>McCrae (1996); <sup>14</sup>Mehrabian (1996); <sup>15</sup>Leeson & Heaven (1999); <sup>16</sup>Gosling, Rentfrow, & Swann (2003); <sup>17</sup>Van Hiel, Mervielde, & De Fruyt (2004); <sup>18</sup>Stenner (2005); <sup>19</sup>Alford & Hibbing (2007); <sup>20</sup>Carney et al. (2008, sample 2); <sup>21</sup>Carney et al. (2008, sample 3); <sup>22</sup>Carney et al. (2008, sample 4); <sup>23</sup>Carney et al. (2008, sample 5); <sup>24</sup>Carney et al. (2008, sample 6); <sup>25</sup>Mondak & Halperin (2008, sample 1); <sup>26</sup>Mondak & Halperin (2008, sample 2); <sup>27</sup>Mondak & Halperin (2008, sample 3); <sup>28</sup>Von Collani & Grumm (2009); <sup>29</sup>Gerber, Huber, Doherty, & Dowling (2010); <sup>30</sup>Mondak, Hibbing, Canache, & Seligson (2010); <sup>31</sup>Zettler & Hilbig (2010); <sup>32</sup>Lewis & Bates (2011); <sup>33</sup>Gerber, Huber, Doherty, & Dowling (2011, CCES sample); <sup>34</sup>DeNeve (2013); <sup>78</sup>Sibley & Duckitt (2008).

**Non-FFM Facets:** <sup>35</sup>Jaensch (1938); <sup>36</sup>Fromm (1947); <sup>37</sup>Frenkel-Brunswik (1948); <sup>38</sup>Adorno, Frenkel-Brunswik, Levinson, & Sanford (1950); <sup>39</sup>Janowitz & Marvick (1953); <sup>40</sup>Eysenck (1954); <sup>41</sup>McClosky (1958); <sup>42</sup>Freud (1959/1991); <sup>43</sup>Rokeach (1960); <sup>44</sup>Milbrath (1962); <sup>45</sup>Tomkins (1963); <sup>46</sup>Brown (1965); <sup>47</sup>St. Angelo & Dyson (1968); <sup>48</sup>Maccoby (1968); <sup>49</sup>Eckhardt & Newcombe (1969); <sup>50</sup>Looft (1971); <sup>51</sup>Wilson (1973); <sup>52</sup>Wilson & Brazendale (1973); <sup>53</sup>Levin & Schalmo (1974); <sup>54</sup>Sidanius (1978); <sup>55</sup>Costantini & Craik (1980); <sup>56</sup>Altemeyer (1981); <sup>57</sup>Tetlock (1983); <sup>58</sup>Tetlock (1984); <sup>59</sup>Feather (1984); <sup>60</sup>Kline & Cooper (1984); <sup>61</sup>Costa & McCrae (1992a); <sup>62</sup>Neuberg & Newsom (1993); <sup>63</sup>Altemeyer (1996); <sup>64</sup>Altemeyer (1998); <sup>65</sup>Jost, Glaser, Kruglanski, & Sulloway (2003); <sup>66</sup>Van Hiel, Pandeale, & Duriez (2004); <sup>67</sup>Kruglanski (2004); <sup>68</sup>Block & Block (2006); <sup>69</sup>Haidt & Graham (2007); <sup>70</sup>Hirsh, DeYoung, Xu, & Peterson (2010); <sup>73</sup>Fraley, Griffin, Belsky, & Roisman (2012); <sup>77</sup>Wilson, Ausman, & Matthews (1973); <sup>79</sup>Shook & Fazio (2009); <sup>81</sup>Desimoni & Leone (2014).

Neuroticism encapsulates the experience of negative affect such as anger, anxiety and depression as well as self-consciousness and the experience of stress (Costa & McCrae, 1992a). Table 2.2 (panel 3) displays that Neuroticism is generally positively correlated with liberalism. Anxiety is often emphasized to justify the positive relationship between Neuroticism and liberalism. For instance, neurotic individuals supposedly prefer liberal economic policies in order to “cope with their anxiety” (Verhulst, Eaves, et al., 2012, p. 40; Gerber, Huber, et al., 2010). However, preliminary assessment of the FFM facet Anxiety does not confirm that there is a connection between Anxiety and liberalism (Butler, 2000; Carney et al., 2008; Gerber et al., 2011a). Further complicating the matter, research outside the FFM framework suggests that conservatives are more anxious (see Table 2.2, panel 1). Consequently, more research will be needed to disentangle the relationship between Anxiety and political attitudes.

The other Neuroticism facets have received less attention when explaining the connection between Neuroticism and political attitudes. However, in line with the Anxiety facet, research outside the FFM framework suggests that conservatives feel negatively about themselves (but see, Gerber et al., 2011a), experience more anger and are more self-conscious (Eysenck, 1954; McClosky, 1958; G. D. Wilson & Brazendale, 1973; G. D. Wilson, 1973). The facet Impulsiveness differs from this patterns as liberals are more impulsive (Block & Block, 2006; Eysenck, 1954).

To summarize, the FFM trait Neuroticism and liberalism seem positively correlated. However, studies outside the FFM framework predominantly suggest that conservatives should be high scorers on most of the Neuroticism facets. Consequently, further research is needed to address the direction of the relationship between Neuroticism, its facets, and political attitudes.

Turning to Agreeableness, studies that employ a one-dimensional operationalization of ideology yield inconsistent results. Some studies report that liberals are more agreeable, whereas

others demonstrate that conservatives are more agreeable (see Table 2.2, panel 2). Moving beyond the one-dimensional operationalization of political ideology, Agreeableness is differentially correlated with social conservatism (Gerber et al., 2011a; Gerber, Huber, et al., 2010; Riemann et al., 1993) and economic liberalism (Gerber et al., 2011a; Gerber, Huber, et al., 2010; Leeson & Heaven, 1999; Riemann et al., 1993; Sibley & Duckitt, 2008; Van Hiel & Mervielde, 2004).

The link between Agreeableness and liberal attitudes is often explained by stressing that Agreeableness is a pro-social trait which leads to sympathetic responses “to individuals in ... need” (Gerber et al., 2011a, p. 271; Gerber, Huber, et al., 2010, p. 116). The tendency to feel compassion for others is broadly represented in the facets Tender-Mindedness, Trust and Altruism (Costa et al., 1991, pp. 888–889). For instance, the connection between liberalism and Tender-Mindedness is forthright as this facets measures the “tendency to be guided by feelings, particular those of sympathy, in making judgments and forming attitudes” (Costa et al., 1991, p. 889). Indeed, inside and outside the FFM framework there is evidence that liberals are more tender-minded, trusting and altruistic (see Table 2.2, panel 2).

The positive correlation between Agreeableness and social conservatism has been explained by arguing that people high on Agreeableness oppose liberal social policies that “upset existing and functioning communal relationships” (Gerber, Huber, et al., 2010, p. 116). The facets Compliance, Modesty and Straightforwardness capture this preference for conformity and traditionalism (Costa et al., 1991, pp. 888–889). Outside the FFM framework some studies report that the factor *Politeness*, which encapsulates the facets Compliance, Modesty and Straightforwardness (DeYoung, Quilty, & Peterson, 2007), is positively correlated with conservatism (Hirsh et al., 2010; Osborne, Wootton, & Sibley, 2013). However, within the FFM

framework there is no support for this argument (see, Gerber et al., 2011a; Peterson & Palmer, 2013).

To summarize, the facets of Agreeableness are to different degrees and regularities correlated with political attitudes. At this point more research is needed to assess whether the facet Altruism, Tender-Mindedness and Trust are positively associated with liberalism and whether the facets Compliance, Modesty and Straightforwardness are related to social conservatism.

Extraversion embodies social and outgoing behaviour as well as the tendency to experience warm feelings and positive emotions. Extraversion is sometimes positively correlated with conservatism (see Table 2.2, panel 3) but the conceptual understanding of this relationship is unclear (Gerber, Huber, et al., 2010, p. 117). Remarkably, research outside the FFM framework suggests that liberals are more extraverted. Specifically, liberals have shown to be more assertive, seek more excitement and are more active compared to conservatives (Block & Block, 2006; Costantini & Craik, 1980; Fraley et al., 2012; Looft, 1971; McClosky, 1958). Moreover, liberals experience more positive emotions and warm feelings (Feather, 1984; Maccoby, 1968; Tomkins, 1963). Further research will have to address if, and to what extent, Extraversion and its facets are connected with political attitudes.

I observe two different patterns of relationships between the FFM and political attitudes. Firstly, research inside and outside the FFM framework supports that the traits and facets of Openness and Conscientiousness are associated with political attitudes. Accordingly, stressing specific facets of these traits provide an incomplete impression of the association between these traits and political attitudes. Secondly, the traits Neuroticism, Agreeableness and Extraversion and their facets are less consistently related with political attitudes. Careful empirical explorations will

have to verify if and to what extent the some or all of the facets are associated with political attitudes.

**Table 2.2** Overview of the Associations between Political Attitudes and the Trait and Facets of *Neuroticism, Agreeableness and Extraversion*

FFM Traits and Facets	Inside FFM			Psychological Dispositions outside the FFM
	<i>Liberalism-conservatism</i>	<i>Social attitudes</i>	<i>Economic Attitudes</i>	
<b>Neuroticism</b>	12, 16, 22, 23, 26, 27, 29, 30, 29, 33, 34, 76	29, 33	29, 33	71, 72
Anger-Hostility				Anger <sup>42</sup> , Aggression <sup>37, 40, 43, 53, 60</sup> , Hostility <sup>34, 38, 49</sup>
Anxiety				Fear <sup>34, 42, 53, 60, 61, 62, 65, 70</sup> , Superstitious <sup>35</sup> , Threat <sup>34, 35, 38, 40, 53, 60, 62, 65, 80</sup>
Depression			12	Inferiority <sup>38, 48</sup> , Negative view of self <sup>38</sup> , Unworthiness <sup>65</sup> , Worthlessness <sup>38</sup>
Impulsiveness				Disinhibition <sup>50</sup> , Impulsive <sup>44, 65, 70</sup>
Self-Consciousness				Inhibited <sup>45</sup> , Inhibition of responses <sup>41</sup>
Vulnerability				Guilt <sup>37, 38, 65</sup> Resilient <sup>65</sup>
<b>Agreeableness</b>	8, 17, 19, 28, 29, 31, 76 22, 23, 32	12, 29, 33	8, 12, 15, 29, 33, 78	
Altruism	31			Altruism <sup>37, 69, 75</sup> , Indifferences <sup>55</sup> , Sympathy <sup>74</sup> Impersonal <sup>52</sup> , Lack of empathy <sup>45</sup>
Compliance	11, 76			Non-conforming <sup>68</sup> Compliant <sup>66, 74</sup> , Submissive <sup>38</sup>
Modesty				Modesty <sup>81</sup> , Narcissistic <sup>55</sup> , Self-Centered <sup>55</sup> , Consideration of others' needs <sup>74</sup> , Interested <sup>55</sup> , Self-Centered <sup>37</sup>
Straightforwardness				Manipulative <sup>55</sup> Straightforward <sup>68, 74</sup>
Tender-Mindedness	7, 10			Tender-minded <sup>1, 40, 45</sup> , Tenderness <sup>74</sup> Toughness <sup>38</sup> , Toughmindedness <sup>52</sup>
Trust	7, 76			Trustworthy <sup>35, 36, 42</sup> Cynicism <sup>38</sup> , Distrust <sup>39, 41, 45, 68</sup> , Skeptical <sup>40</sup> , Suspicious <sup>41</sup> , Trust <sup>55</sup>
<b>Extraversion</b>	1, 34 12, 29, 33	12, 24, 29, 33	29, 33	52
Activity	11	11		Energetic <sup>55, 68</sup>
Assertiveness				Assertive <sup>68</sup> , Dominant <sup>68</sup> , Power oriented <sup>68</sup> , Dominant <sup>40</sup> , Isolated <sup>39</sup> , Shy <sup>68</sup> , Submissive <sup>41</sup> , Timid <sup>41</sup>
Gregariousness	6, 76			Interpersonally oriented <sup>68</sup> Misanthropic <sup>38, 49</sup> , Isolated <sup>41</sup> Interested in Others <sup>55</sup>
Excitement Seeking				Boredom susceptibility <sup>53</sup> , Excitable <sup>55</sup> , Restlessness <sup>55, 73</sup> , Sensation seeking <sup>45, 50, 52, 53, 55, 59, 65</sup> , Unpredictable <sup>48</sup> Controlled <sup>44</sup> , Impulsiveness <sup>40</sup> , Sensationalistic <sup>40</sup>
Positive Emotions				Affection <sup>37</sup> , Expressive <sup>45, 68</sup> , Happiness <sup>59</sup> Cheerful <sup>55</sup> , Emotional cold <sup>52</sup> , Frustrated <sup>41</sup>
Warmth				Affective <sup>45</sup> , Alienation <sup>41</sup> , Life-loving <sup>48</sup> , Polite <sup>59</sup> Antisocial <sup>52</sup>

**Note:** Black numbers indicate a positive correlation with liberalism. Red numbers indicate a negative correlation with conservatism. An insignificant correlation between a FFM trait or facet with liberalism-conservatism is signalled by the fact that the number of the specific study is not mentioned in the specific panel of column 2.

**FFM Facet:** <sup>1</sup>Trapnell (1994); <sup>2</sup>Van Hiel et al. (2000, study 1); <sup>3</sup>Van Hiel et al. (2000, sample 2); <sup>4</sup>Van Hiel et al. (2000, sample 3); <sup>5</sup>Van Hiel et al. (2000, sample 4); <sup>6</sup>Butler (2000, study 2); <sup>7</sup>Van Hiel & Mervielde (2004, study 1); <sup>8</sup>Van Hiel & Mervielde (2004, study 2); <sup>9</sup>Jost et al. (2007, study 1); <sup>10</sup>Carney, Jost, Gosling, & Potter (2008, sample 1); <sup>11</sup>Gerber et al. (2011a); <sup>76</sup>Peterson and Palmer (2013).

**FFM Traits:** <sup>12</sup>Riemann et al. (1993); <sup>13</sup>McCrae (1996); <sup>14</sup>Mehrabian (1996); <sup>15</sup>Leeson & Heaven (1999); <sup>16</sup>Gosling, Rentfrow, & Swann (2003); <sup>17</sup>Van Hiel et al. (2004); <sup>18</sup>Stenner (2005); <sup>19</sup>Alford & Hibbing (2007); <sup>20</sup>Carney et al. (2008, sample 2); <sup>21</sup>Carney et al. (2008, sample 3); <sup>22</sup>Carney et al. (2008, sample 4); <sup>23</sup>Carney et al. (2008, sample 5); <sup>24</sup>Carney et al. (2008, sample 6); <sup>25</sup>Mondak & Halperin (2008, sample 1); <sup>26</sup>Mondak & Halperin (2008, sample 2); <sup>27</sup>Mondak & Halperin (2008, sample 3); <sup>28</sup>Von Collani & Grumm (2009); <sup>29</sup>Gerber et al. (2010); <sup>30</sup>Mondak et al. (2010); <sup>31</sup>Zettler & Hilbig (2010); <sup>32</sup>Lewis & Bates (2011); <sup>33</sup>Gerber et al. (2011a); <sup>34</sup>DeNeve (2013); <sup>78</sup>Sibley & Duckitt (2008).

**Non-FFM Facets:** <sup>35</sup>Jaensch (1938); <sup>36</sup>Fromm (1947); <sup>37</sup>Frenkel-Brunswik (1948); <sup>38</sup>Adorno et al. (1950); <sup>39</sup>Janowitz & Marvick (1953); <sup>40</sup>Eysenck (1954); <sup>41</sup>McClosky (1958); <sup>42</sup>Freud (1959/1991); <sup>43</sup>Rokeach (1960); <sup>44</sup>Milbrath (1962); <sup>45</sup>Tomkins (1963); <sup>48</sup>Maccoby (1968); <sup>49</sup>Eckhardt & Newcombe (1969); <sup>50</sup>Looff (1971); <sup>52</sup>Wilson & Brazendale (1973); <sup>53</sup>Levin & Schalmo (1974); <sup>55</sup>Costantini & Craik (1980); <sup>59</sup>Feather (1984); <sup>60</sup>Kline & Cooper (1984); <sup>61</sup>Costa & McCrae (1992a); <sup>62</sup>Neuberg & Newsom (1993); <sup>65</sup>Jost, Glaser, Kruglanski, & Sulloway (2003); <sup>68</sup>Block & Block (2006); <sup>69</sup>Haidt & Graham (2007); <sup>70</sup>Hirsh, DeYoung, Xu, & Peterson (2010); <sup>71</sup>Verhulst, Hatemi, & Martin (2010); <sup>72</sup>Verhulst, Eaves, & Hatemi (2012a); <sup>73</sup>Fraley et al. (2012); <sup>74</sup>Osborne, Wootton, & Sibley (2013); <sup>75</sup>Bechtel, Hainmueller, & Margalit (2013); <sup>80</sup>Onraet et al. (2013); <sup>81</sup>Desimoni & Leone (2014).



### 2.3. Method

The data used in this study was collected as part of a larger two-wave panel study addressing the relationship between personality and political behaviour. The study was conducted in a nationally representative web-survey of the Danish population stratified by gender, age, region and education (see, Dinesen et al., 2014, pp. 5–6). *Gallup Denmark* invited members of an internet-panel of approximately 400,000 Danes to participate in the survey. Data collection occurred between May 25 and June 6 2010. In total 8,012 panel-members were invited and 3,612 Danish adults completed the questionnaire, equalling a 45% response rate. In 2011 2840 of the 3612 respondents in the first wave were still active in the panel and between October 26 and November 15, 2011 these persons were invited to participate in the second wave of the study. 1972 persons from the first wave answered the survey, equalling a response rate of 69 percent (Supplementary Material Chapter 2.A provides the descriptive statistics of the 2010 [Table 2.A.1] and 2011 [Table 2.A. 2] wave).<sup>13</sup>

In this study, political ideology is conceptualized as a multi-dimensional construct, which consists of a social attitude dimension and an economic attitude dimension (Achterberg & Houtman, 2009; Feldman & Johnston, 2013; Stubager, 2010a; Treier & Hillygus, 2009; Van Der Brug & Van Spanje, 2009). I selected those items that tap into the social and economic attitudes dimensions (Feldman & Johnston, 2013, p. 21; Treier & Hillygus, 2009, p. 686) and were included both waves of the study in order to facilitate internal replication. The social attitude dimension was measured using seven items that tap into issues such as gay rights, punitive attitudes and

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<sup>13</sup> I tested to what extent the sample in 2011 was skewed on the personality traits due to attrition but found no significant differences in means for Openness and Extraversion, and substantially small but significant mean differences for Neuroticism, Conscientiousness and Agreeableness. These small differences are not expected to influence the estimated the associations with political attitudes. Results are available upon request.

environmental concerns. The economic attitude dimension consisted of two items measuring support for redistribution. All items were scored on a 4-point Likert-scale ranging from “Completely Agree” to “Completely Disagree” with a separate “don’t know option” (Supplementary Material Chapter 2.B, Table 2.B. 1 and Table 2.B. 2 for item wording). The items included in the study load as expected on the economic and social dimensions (see Supplementary Material Chapter 2.B Table 2.B.3 and Table 2.B. 4 for factor loadings in 2010 and 2011).<sup>14</sup> Note that items were coded so that high scorers on the items mean liberal (e.g., left-wing) political attitudes.

The FFM traits and facets were measured in the first wave of the study using the Short Version of the NEO PI-R (Skovdahl-Hansen et al., 2004). Participants responded to items such as “I am inclined to believe the best about people” and scored on a five-point Likert scale, ranging from “strongly agree” through “strongly disagree.” The Danish NEO PI-R Short Version consisted of six facets per trait and two items for each facet. Per facet the two items with the highest item-loading on the broad trait were included in the NEO PI-R Short Version.

I estimated a series of confirmatory factor analyses in order to assess the correlations between the FFM traits, facets and political attitude dimensions. The starting point of the analyses is the first wave of the survey (2010) in which the FFM traits and facets as well as the social and economic attitude dimensions were measured. For each independent FFM trait I estimated two models. Firstly, I estimated a higher-order confirmatory factor analysis whereby the facets of one FFM trait were treated as indicators of the broader FFM trait. The FFM trait was then correlated with the social and economic attitude dimensions. Secondly, I estimated a model where the facets

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<sup>14</sup> The social and economic attitude dimensions correlate modestly across the samples in 2010 ( $r \approx 0.20$ ) and 2011 ( $r \approx 0.29$ ).

of one personality trait were directly correlated with the social and economic attitude dimensions. Doing so, I can test to what extent the facets of trait are homogeneously or heterogeneously correlated with political attitudes. Estimating the confirmatory factor models, Heywood cases occurred relatively frequently due the relatively strong correlations between the lower order facets (Dillon, Kumar, & Mulani, 1987). If a Heywood case occurred, I grouped the lower order facets into a single factor when the items closely resembled each other. Alternatively, I have excluded the facet from the analyses. I internally replicate my findings by performing a second series of analyses, whereby I correlate the FFM traits and facets measured in 2010 with the social and economic attitude dimensions measured in 2011.

## **2.4. Results**

The correlation coefficients between the FFM traits and facets with the attitude dimensions are presented in Table 2.1 (Openness and Conscientiousness) and Table 2.2 (Neuroticism, Agreeableness and Extraversion).<sup>15</sup> The correlations between the attitude dimensions and Openness are presented in the first panel of Table 2.1. I have excluded the Values facet from the analyses as this facet has been designed to operationalize broad liberalism (McCrae & Sutin, 2009; McCrae, 1996).<sup>16</sup> Openness is positively correlated with liberal social and economic attitudes in 2010 and 2011. In both years there is a positive correlation between every facet of Openness and social liberalism. However, turning to the economic attitudes dimension in 2010, the facets

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<sup>15</sup> The model fit, factor loadings and residual variances for each of the confirmatory factor models are reported in the Supplementary Materials (Supplementary Material Chapter 2.C [wave 2010] and Supplementary Material Chapter 2.D [wave 2011]).

<sup>16</sup> Inclusion of the Values facet leads to a Heywood case, whereby the latent correlation between the Values facet and the social attitude dimension was higher than 1. This signals that the Values facet is closely correlated with social attitudes (McCrae, 1996, pp. 325–327). Accordingly, I have excluded the facet from the model. Results are available upon request.

Aesthetics (see also, Van Hiel & Mervielde, 2004, p. 679) and Feelings correlate positively with economic liberalism. The facets Fantasy and Ideas are unrelated to economic liberalism in 2010, whereas the facet Actions is negatively correlated with economic liberalism. This pattern is replicated in 2011, with the only difference that the facets Fantasy and Ideas are positively, but weakly, correlated with economic liberalism. Accordingly, the relationship between Openness and liberal economic attitudes is driven by some but not all facets.

I observe in Table 2.1 (panel 2) that the Conscientiousness trait is negatively correlated with social and economic liberalism in 2010 and 2011. In line with research outside the FFM framework, the facets Self-Discipline, Achievement Striving and Dutifulness are negatively correlated with social and economic liberalism. Only the facet Order deviates from this pattern as Order is not related with the social attitude dimension, however, the facet Order is negatively correlated with economic liberalism. Consequently, liberals and conservatives differ over the full range of Conscientiousness facets. The selective emphasis on one specific facet to explain the correlation between Conscientiousness and political attitudes is not justified and provides an incomplete impression of the relationship between Conscientiousness and political attitudes.

**Table 2.1** Correlations of the FFM Personality Traits and Facets with the Social and Economic Attitude Dimensions: *Openness to Experience and Conscientiousness* (2010 and 2011)

	2010		2011	
	<i>Social Liberalism</i>	<i>Economic Liberalism</i>	<i>Social Liberalism</i>	<i>Economic Liberalism</i>
<b>1. Openness</b>	0.56*	0.07*	0.52*	0.09*
	(0.02)	(0.02)	(0.02)	(0.03)
Actions	0.33*	-0.10*	0.32*	-0.07
	(0.03)	(0.03)	(0.04)	(0.04)
Aesthetics	0.37*	0.12*	0.37*	0.07*
	(0.02)	(0.02)	(0.03)	(0.03)
Fantasy	0.22*	0.04	0.21*	0.07*
	(0.02)	(0.02)	(0.03)	(0.03)
Feelings	0.25*	0.12*	0.23*	0.09*
	(0.03)	(0.03)	(0.04)	(0.04)
Ideas	0.57*	0.02	0.55*	0.11*
	(0.02)	(0.02)	(0.03)	(0.03)
<b>2. Conscientiousness</b>	-0.10*	-0.21*	-0.11*	-0.20*
	(0.02)	(0.02)	(0.03)	(0.03)
Achievement Striving	-0.07*	-0.17*	-0.13*	-0.20*
	(0.02)	(0.02)	(0.03)	(0.03)
Competence	-	-	-	-
Dutifulness <sup>a</sup>	-0.06*	-0.15*	-0.05*	-0.15*
	(0.03)	(0.02)	(0.04)	(0.03)
Deliberation	-	-	-	-
Order	-0.04	-0.23*	-0.02	-0.19*
	(0.02)	(0.02)	(0.03)	(0.03)
Self-Discipline	-0.18*	-0.18*	-0.20*	-0.20*
	(0.02)	(0.03)	(0.03)	(0.03)

The model fit, factor loadings and residual variances for each of the confirmatory factor models are reported in the Supplementary Materials (Supplementary Material Chapter 2.C [wave 2010] and Supplementary Material Chapter 2.D [wave 2011]).

<sup>a</sup> Heywood cases lead me to merge the facet Competence with Dutifulness. Competence was measured using the items “I have some clear goals and work systematically towards them” and “I work hard to achieve my goals,” whereas Dutifulness item closely resemble Competence “I am a productive person who always get my work done”, and “I find it hard to pull myself together to do the things I ought (R).” The Facet Deliberation was excluded.

\* $p < 0.05$

The trait Neuroticism is unrelated to social liberalism (see also, Carney et al., 2008, sample 6; Leeson & Heaven, 1999; Van Hiel & Mervielde, 2004, study 2) but positively correlated with economic liberalism (see Table 2.1, panel 1). At the facet level, I observe two different patterns of correlations with political attitudes. First, the Neuroticism facets are differentially correlated with the social attitude dimension. Specifically, the facets Impulsiveness and Self-consciousness correlate positively with social liberalism in 2010 and 2011 (see also, Fraley et al., 2012; St. Angelo & Dyson, 1968), whereas the facet Anxiety is negatively, but weakly, correlated with social liberalism in 2010 and unrelated to social liberalism in 2011.<sup>17</sup> These differential correlations between the FFM facets and social attitudes cancel out the correlation of the trait Neuroticism with social attitudes. The relationship between Neuroticism and social attitudes is thereby better seen at the facet level than at the trait level.

Turning to the economic attitude dimension, I observe that the facet Anxiety, Impulsiveness and Self-Consciousness are homogeneously correlated with economic liberalism in 2010 and 2011 (Gerber et al., 2011a; Gerber, Huber, et al., 2010).<sup>18</sup> The selective emphasis of the Anxiety facet to explain the connection between Neuroticism and economic liberalism is not justified as all Neuroticism facets correlate with economic liberalism. I find no support for the argument that conservatives are more anxious (Block & Block, 2006; Fraley et al., 2012; Jost et al., 2003).

Agreeableness correlates positively with economic liberalism and, contrary to the previous literature, social liberalism (see Table 2.1, panel 2). The correlation between Agreeableness and

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<sup>17</sup> I wanted to isolate the facet Anxiety so that I could test whether the common emphasis on this facet was correct. Therefore, I have excluded the facets Anger, Depression and Vulnerability, which all correlate highly with Anxiety facet.

<sup>18</sup> I also performed analyses where I have excluded the Anxiety facet and included the Anger facet. These analyses suggest that the Anger facet is unrelated to the social attitude dimension and positively correlated to the economic attitude dimension. I could not estimate the facet Depression due to a Heywood case.

political attitudes is driven by different facets across the social and economic attitude dimensions. I observe that the facet Trust ( $r=0.50$ ), and to a lesser extent Altruism, correlate strongly with social liberalism.<sup>19</sup> Liberal social attitudes are thereby driven by the concerns for others rooted in the facets Trust and Altruism. Turning to the economic attitude dimension, I observe that the facet Trust is weakly and inconsistently correlated with economic liberalism, whereas the facets Altruism, Straightforwardness, and Modesty are positively correlated with liberal economic attitudes.<sup>20</sup> Note that I do not find any evidence that Agreeableness or some of its facets are related to social conservatism as demonstrated in a few other studies inside and outside the FFM (Gerber et al., 2011a; Gerber, Huber, et al., 2010; Hirsh et al., 2010; Osborne et al., 2013; Riemann et al., 1993).

Lastly, I observe in Table 2.2 (panel 3) that Extraversion correlates negatively with economic liberalism but, contrary to earlier studies, positively with social liberalism. The facet Assertiveness seems to drive the results across the two attitude dimensions. On the one hand, Assertiveness is positively correlated with social liberalism and thereby confirms that liberals are more assertive and dominant, whereas conservatives are more isolated, shy and timid (Block & Block, 2006; Janowitz & Marvick, 1953). On the other hand, Assertiveness and Activity correlate negatively with

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<sup>19</sup> In an additional model (wave 2010), I have removed the facet Trust from the model where the facets are treated as indicators of the trait. In this model the correlation between Agreeableness and social liberalism decreases to a weak but significant correlation ( $r=0.06$ ). Model results are available upon request.

<sup>20</sup> Note that the pattern of correlations of the Agreeableness facets in 2011 is highly similar as in 2010. However the higher order trait is not significantly related to economic liberalism which is probably attributable to the somewhat poorer model fit of the higher order model in 2011.

economic liberalism (Eysenck, 1954).<sup>21</sup> To summarize, the relationship between Extraversion and political attitudes seems to be driven by specific facets instead of the higher order trait.

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<sup>21</sup> Removing the facet Assertiveness from the higher order confirmatory factor analysis where the Extraversion trait is correlated with political attitudes shows the importance of the facet as the correlation between Extraversion and economic attitudes is not significant anymore, whereas the correlation of the Extraversion with social conservatism decreases slightly ( $r=0.07$ ).



**Table 2.2** Correlations of the FFM Personality Traits and Facets with the Social and Economic Attitude Dimensions: *Neuroticism, Agreeableness and Extraversion*

	2010		2011	
	<i>Social Liberalism</i>	<i>Economic Liberalism</i>	<i>Social Liberalism</i>	<i>Economic Liberalism</i>
<b>1. Neuroticism</b>	0.04 (0.02)	0.22* (0.02)	0.06 (0.03)	0.25* (0.03)
Anger-Hostility <sup>a</sup>	-	-	-	-
Anxiety	-0.05* (0.03)	0.22* (0.02)	-0.03 (0.03)	0.26* (0.03)
Depression <sup>a</sup>	-	-	-	-
Impulsiveness	0.14* (0.03)	0.16* (0.03)	0.15* (0.04)	0.20* (0.03)
Self-Consciousness	0.09* (0.03)	0.19* (0.02)	0.10* (0.03)	0.20* (0.04)
Vulnerability <sup>a</sup>	-	-	-	-
<b>2. Agreeableness</b>	0.20* (0.02)	0.17* (0.02)	0.24* (0.03)	-0.06 (.03)
Altruism	0.14* (0.02)	0.12* (0.02)	0.14* (0.03)	0.12* (0.03)
Compliance <sup>b</sup>	-	-	-	-
Modesty	-0.05* (0.03)	0.20* (0.03)	-0.08* (0.04)	0.21* (0.04)
Straightforwardness	0.06* (0.02)	0.17* (0.02)	0.02 (.03)	0.14* (0.03)
Trust	0.50* (0.02)	-0.05* (0.02)	0.50* (0.03)	-0.04 (0.03)
<b>3. Extraversion</b>	0.10* (0.02)	-0.07* (0.02)	0.08* (0.03)	-0.08* (0.03)
Activity	0.03 (0.03)	-0.12* (0.03)	0.00 (0.04)	-0.12* (0.04)
Assertiveness	0.17* (0.02)	-0.15* (0.02)	0.17* (0.03)	-0.12* (0.03)
Excitement Seeking	0.06* (0.02)	-0.04* (0.02)	0.03 (0.03)	-0.07* (0.03)
Gregariousness <sup>c</sup>	-	-	-	-
Positive Emotions <sup>c</sup>	-	-	-	-
Warmth	0.08* (0.02)	0.01 (0.02)	0.08* (0.03)	0.01 (0.03)

The model fit, factor loadings and residual variances for each of the confirmatory factor models are reported in the Supplementary Materials (Supplementary Material Chapter 2.C [wave 2010] and Supplementary Material Chapter 2.D [wave 2011]).

\* $p < 0.05$

<sup>a</sup> Facets Anger, Depression and Vulnerability excluded

<sup>b</sup> Facet Compliance Excluded

<sup>c</sup> Facets of Gregariousness combined with the facets of Excitement Seeking. Positive Emotions excluded

## 2.5. Discussion

Scholars often stress certain facets of a FFM trait to explain the relationship of a FFM trait with political attitudes. So far, most studies did not actually isolate the lower order facets. This study assessed the relationship between social and economic attitude dimensions and the FFM traits and facets. In doing so, I was able to test whether all or some of the FFM facets are correlated with political attitudes. I have documented three patterns of associations. First, all facets of Conscientiousness were related to the attitude dimensions. Alternatively, the association between political attitudes and the FFM traits was driven by specific facets as is the case for Agreeableness and Extraversion. Thirdly, for Openness and Neuroticism the attitude dimension conditions whether the association should be interpreted at the trait level or at that one should focus upon lower order facets. I will discuss the implications of these patterns.

The facets of Conscientiousness are consistently related to social and economic attitudes. Consequently, emphasizing one facet to interpret the association between the trait Conscientiousness and conservatism provides an incomplete insight in the relationship between Conscientiousness and political attitudes. In line with extant research outside the FFM (see, Table 2.1, panel 2), I demonstrate that conservatives generally prefer structure, strive for achievement, and are self-disciplined and dutiful. Moreover social conservatives are ordered.

The relationship between political attitudes and the traits and facets Openness and Neuroticism differs across attitude dimensions. All Openness facets are associated with social liberalism which implies that disproportionately stressing the facet Ideas to explain the relationship between Openness and social liberalism provides an incomplete insight into the connection between Openness and social liberalism. Instead, social liberals are not only open to ideas but also more open to aesthetics, feelings, fantasy and actions. However, some but not all of the Openness

facets are connected with economic liberalism. Accordingly, this association is better interpreted at the facet level, whereby liberal economic attitudes seem to resonate with the tendency to be more sensitive for aesthetics and feelings.

Turning to Neuroticism, the tendency to emphasize the Anxiety facet to explain the relationship between Neuroticism and economic attitudes (Gerber, Huber, et al., 2010; Verhulst, Eaves, et al., 2012) provides an incomplete picture as all facets of Neuroticism are connected to economic liberalism. Yet, the association between Neuroticism and social liberalism is better interpreted at the facet level. Social liberals seem to be self-conscious and vulnerable but not anxious. I thereby demonstrate that facets of Neuroticism provide more information about the association with social attitudes compared to the trait.

Lastly, the patterns documented for Agreeableness and Extraversion demonstrate that specific facets instead of the broad traits are associated with political attitudes. For instance, the Agreeableness facet Trust is strongly connected to social liberalism, whereas this facet is negatively or even unrelated to economic liberalism. Yet, the facets Altruism, Compliance and Straightforwardness drive the association with economic liberalism. Likewise, the Extraversion facet Assertiveness seems to drive the relationship with political attitudes. This suggests that scholars should better theorize and assess specific facets instead of the broad traits.

The conclusions reached in this study also provides a practical suggestion for studies employing brief measures of personality in the study of political attitudes (e.g., Gerber et al., 2011a; Gerber, Huber, et al., 2010; Mondak & Halperin, 2008). Brief personality traits will tend to provide a correct impression of the relationship between the FFM trait and political attitudes when all facets are homogeneously correlated with political attitudes because it does not matter which facets are overrepresented in the brief measures of the trait. Based upon the result of this

study, I expect this to be the case for Conscientiousness and political attitudes, Openness and social liberalism, as well as Neuroticism and economic liberalism. However, scholars run the risk of underestimating or overestimating the correlation of a trait with a political attitude dimension when the facets of a trait are heterogeneously correlated with political attitudes. Here, the strength of the correlation between the trait and the attitude dimension will be conditional upon the facets that are represented in the brief personality measure (Credé et al., 2012, p. 876; Gerber et al., 2011a, pp. 523–524). For instance, if a brief personality measure samples disproportionately from the facet Trust (Agreeableness) this will lead to a strongly positive correlation with social liberalism but a weak or absent correlation with economic liberalism. Likewise, disproportionately sampling from the Assertiveness facet will lead to correlation with social liberalism and economic conservatism, whereas sampling from other Extraversion facets will increase the possibility of reporting a null-finding. This implies that scholars need to be careful when interpreting the significant and insignificant associations between brief measures of personality and political attitudes. They might underestimate the association of a trait with political attitudes due to the fact that the trait measures facets which are not connected to political attitudes, however, they may also overestimate the association between a trait and political attitudes as the association could very well be driven by a specific facet and not by the trait.

There are a few limitations in this study that highlight areas that may warrant further research. Firstly, the NEO PI-R Short Version provided one of the first opportunities to study the associations between facets and political attitudes in a large population-based sample. Unfortunately, most but not all facets could be estimated independently. Further research is well advised to include large personality batteries such as the full 240-item NEO PI-R (Costa & McCrae, 1992a). I am aware that these larger batteries can be demanding for participants in survey-research, however, I have

showed that lower order facets provide important insights into the associations between the FFM and political attitudes.

In this dissertation, I have demonstrated that the FFM traits and facets are to different degrees and regularities associated with the social and economic attitude dimensions. However, there are other meaningful attitudinal dimensions that have not been taken into account. Future research could also assess foreign policy attitudes (Schoen, 2007) or libertarianism (Iyer, Koleva, Graham, Ditto, & Haidt, 2012). Doing so, a better understanding the association between the FFM and political attitudes will be achieved.

Thirdly, this study focuses upon a single country. Comparative research will make it possible to confirm whether the here outlined patterns of associations generalize across western democracies. In a first attempt, Verhulst, Bakker and Hatemi (2013) study the link between the FFM traits and facets and political attitudes in Denmark, Australia and the US. The results suggest that correlations between political attitudes and the FFM facets are inconsistent across samples. These differences are probably attributable to differences in the operationalization of the attitude dimensions or the sample characteristics (Asendorpf et al., 2013). However, these inconsistencies across samples could also suggest that associations between personality traits and political attitudes differ across contexts. Comparative research making use of comparable samples, similar personality batteries, and comparable measures of political attitudes will make it possible to assess whether the pattern of associations outlined in this study is robust across different political contexts. Moreover, comparative research will make it possible to assess whether the political context influences the strength and direction of the association between personality and political attitudes as suggested in some studies (Redlawsk & Tolbert, 2012; Sibley et al., 2012; Thorisdottir, Jost, Liviatan, & Shrout, 2007).

To conclude, this study yields three important conclusions for the personality and politics literature. First, moving beyond the broad FFM traits provides an opportunity to theorize and test how specific lower order facets are associated with political attitudes. Previous theories have hardly addressed this issue (Gerber, Huber, et al., 2010; Jost et al., 2009; Mondak, 2010; Sibley & Duckitt, 2008) but evoked language at the facet level. I demonstrate that assessment of the facets provide a more nuanced insight in the pattern of associations between the FFM and political attitudes. Secondly, I demonstrate that the FFM traits and facets are to different degrees and regularities correlated with different political attitudes. Thirdly, this study supports the worry formulated by Credé et al. (2012, p. 876) and Gerber et al. (2011a, pp. 523–524) that research employing brief measures of the FFM run in some, but not all, cases the risk of overestimating or underestimating the association between a trait and political attitudes. Overestimation or underestimation of the association is conditional upon the facets represented in the brief measures of personality. To conclude, there is a lot to be gained from moving beyond the broad FFM traits. This study might spark future research addressing the fine-grained association between personality and political attitudes.

### 3. Personality Traits, Income and Economic Attitudes<sup>22</sup>

#### Abstract

Why do people differ in their attitudes towards issues such as redistribution and taxation? Traditionally, income is a predictor of these and other economic attitudes. Addressing the psychological roots of economic attitudes, the Five Factor Model personality traits Openness, Conscientiousness, Agreeableness and Neuroticism have recently been correlated with economic attitudes. In this study I combine both perspectives. First, I demonstrate that citizens with liberal economic attitudes are more agreeable and neurotic but less conscientiousness. Next, I theorize and confirm that the lower income earners have liberal economic attitudes regardless of their personality traits. Among high income earners, who are not in direct need for liberal economic policies, personality traits are related to economic attitudes. I provide empirical support for this argument in two most different western democracies, namely Denmark and the United States. The findings of this study have important implications for the understanding of economic attitudes.

**Keywords:** Economic Attitudes, Income, Personality, Five Factor Model

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<sup>22</sup> The paper will be submitted at *Comparative Politics* February 3, 2014.

### 3.1. Introduction

There is much variation in citizen's attitudes towards economic issues such as government provided social welfare, redistribution of income and increased taxation. These and other political attitudes affect vote choice (Carmines & Stimson, 1980; Key, 1966; Rabinowitz & Macdonald, 1989) and public policy (Erikson et al., 2002; Key, 1961). Therefore, it is important to understand the sources of the variation in economic attitudes. Extant research has put forward that low income earners prefer liberal (left-wing) economic policies, whereas high income earners oppose liberal economic policies (Barber, Beramendi, & Wibbels, 2013; Daniel Doherty et al., 2006; Gilens, 1999, 2009; Kluegel & Smith, 1986; Meltzer & Richard, 1981; Page et al., 2013; Rehm, 2009, 2010, 2011; Sears & Funk, 1991; Sears et al., 1980). However, the support for liberal economic policies such as redistribution often "extends into groups whose support could not possibly be motivated by short-term income maximization" (Idema & Rueda, 2011, p. 9; see also, Alesina & Giuliano, 2009; Gilens, 1999). Accordingly, non-economic, explanations have been put forward suggesting that altruism, humanitarianism, egalitarianism and beliefs about fairness affect economic attitudes (Alesina & Angeletos, 2005; Bechtel et al., 2013; Benabou & Tirole, 2006; DellaVigna, List, & Malmendier, 2012; Emmenegger & Klemmensen, 2013; Fong, 2001; Idema & Rueda, 2011). These studies suggest that there is "considerable heterogeneity in the realm of motivations" shaping citizens' economic attitudes (Emmenegger & Klemmensen, 2013, p. 242).

In this study, I move beyond these motivations and assess the psychological roots of economic attitudes which are not so well understood (Feldman, 2013, p. 617). In recent years political science research addressed to what extent political attitudes are associated with the Five Factor Model (FFM) personality traits Openness to Experience, Conscientiousness, Extraversion, Agreeableness and Neuroticism (Gerber et al., 2011a; Gerber, Huber, et al., 2010; Mondak &



Halperin, 2008). The “elective affinity model” explains that persons match the symbolic content of political issues with the goals and motives rooted in their personality (Jost et al., 2009, p. 308; see earlier, McClosky, 1958). Yet, only a few studies specifically assessed the association between personality and economic attitudes. Preliminary findings suggest that economic liberalism correlates positively with Openness, Agreeableness and Neuroticism, but negatively with Conscientiousness (Carney et al., 2008, Sample 6; Gerber et al., 2011a; Gerber, Huber, et al., 2010; Thorisdottir et al., 2007; Van Hiel & Mervielde, 2004, Study 2). In the first step of this study, I address whether variation in economic attitudes is associated with the FFM personality traits. In the next step, I move beyond the direct associations between personality and economic attitudes. I build upon the argument by Robert Lane (1955) who theorized that economic self-interest narrows the scope for personality traits to relate to political attitudes. Following Lane (1955), I expect that among citizens with lower levels of income, material self-interest drives the support for liberal economic policies regardless of the personality traits. The effect of material self-interest on economic attitudes decreases among the higher income earners and this provides the opportunity for the personality traits to relate to economic attitudes.

I test my argument in two most different western democracies, namely Denmark and the United States (Przeworski & Teune, 1970; Slater & Ziblatt, 2013). First, I report that citizens with liberal economic attitudes are more agreeable, neurotic, and possibly open to experience, whereas they are less conscientious. I report that respondents with low income levels have liberal economic attitudes regardless of their personality traits. As expected, personality traits correlate with economic attitudes among the high income earners. Specifically, among high income earners, economic liberalism correlates negatively with Conscientiousness and positively with

Agreeableness and, in the US, Neuroticism. These results confirm my argument with the exception that income does not moderate the association between Openness and economic liberalism.

My study contributes to the research addressing the psychological roots of economic attitudes by showing that personality traits correlated with economic attitudes. However, I demonstrate that economic self-interest moderates the association between personality traits and political attitudes. Besides, I confirm that personality traits are related to economic attitudes in a highly consistent manner across two most different political contexts. This study may spark further research addressing the psychological roots of economic attitudes.

### **3.2. Personality Traits and Economic Attitudes**

The FFM traits integrates a wide variety of individual differences in temperament and behaviour into the five broad dimensions (Bouchard & Loehlin, 2001, p. 246; Costa & McCrae, 1992a, 1992b; Goldberg, 1992). The FFM traits are genetically heritable (Bouchard & Loehlin, 2001; Yamagata et al., 2006) and are traced back to specific brain regions (DeYoung et al., 2010). The traits develop in childhood (Hampson & Goldberg, 2006) and are relative stability over time (Roberts & DelVecchio, 2000). These characteristics have made the FFM traits increasingly popular in the study of political behaviour (Gerber et al., 2011a; Mondak & Halperin, 2008; Mondak, 2010).

The elective affinity model explicates that the association between political attitudes and personality traits is the product of a “functional match” between the symbolic nature of political issues and the goals and motives rooted in personality traits (Jost et al., 2009, p. 308; see also Caprara & Zimbardo, 2004, p. 590; McClosky, 1958, p. 28). Political issues such as redistribution require citizens to make a judgment about the preference for inequality or equality, and the tendency to maintain or change the current economic and institutional status quo (Johnston,

2013; Jost et al., 2003). For instance, conservative economic attitudes provide a functional match with high levels of Conscientiousness. High scorers on Conscientiousness are dutiful, self-disciplined and strive for achievement, which makes them particularly likely to support the idea that those who work hard will get ahead (Feldman, 1988, p. 419; McClosky & Zaller, 1984) and accept inequality as a result of differences in achievement. Moreover, conscientious persons have a preference for order and structure, which makes them likely to prefer that the role of the government in a society remains unchanged. Preliminary empirical evidence suggests that Conscientiousness is negatively associated with associated with economic liberalism (Gerber et al., 2011a; Gerber, Huber, et al., 2010; Leeson & Heaven, 1999; but see Carney et al., 2008; Riemann et al., 1993; Van Hiel & Mervielde, 2004, Study 2).<sup>23</sup>

Likewise, Openness encapsulates a preference for aesthetics, sensitivity to feelings, willingness to try new activities, consider new ideas, and to re-evaluate one's social and political beliefs (McCrae & Sutin, 2009). Liberal economic policies will change the status quo and increase equality. Therefore it is likely that liberal policies resonate with the motives rooted in Openness as high scorers on Openness are open to new ideas, willing to try new activities, accept complexity and are sensitive to feeling. Indeed, most studies report a positive association between Openness and economic liberalism (Gerber et al., 2011, 2010, p. 116; Riemann et al., 1993, p. 319; Van Hiel & Mervielde, 2004, study 2; but see Carney et al., 2008, sample 6; Leeson & Heaven, 1999).

Agreeableness characters modest, altruistic, pro-social, and cooperative behaviour (Costa et al., 1991). Liberal economic policies resonate well with the tendency of agreeable persons to feel

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<sup>23</sup> Supplementary Material Chapter 3.A provides a detailed overview of the operationalization of economic attitudes in the studies that related FFM traits to economic attitudes. The item wordings differ across the study, however, the items all tap into commonly assumed economic attitude dimension (Achterberg & Houtman, 2009; Feldman & Johnston, 2013; Treier & Hillygus, 2009; Van Der Brug & Van Spanje, 2009).

sympathy for less privileged citizens (Caprara, Alessandri, & Eisenberg, 2012; McCrae, 1996, p. 329). Liberals are more altruistic (Zettler, Hilbig, & Haubrich, 2011), feel sympathy for people who are less fortunate than themselves (Zettler & Hilbig, 2010) and act more pro-social (Bechtel et al., 2013; van Lange, Bekkers, Chirumbolo, & Leone, 2012). Indeed, most studies report a positive association between Agreeableness and economic liberalism (Gerber et al., 2011, 2010; Riemann et al., 1993; Van Hiel & Mervielde, 2004, study 2; but see Carney et al., 2008, sample 6; Leeson & Heaven, 1999).

Neuroticism marks the experience of negative affect such as anxiety, depression and anger as well as the tendency to be self-conscious and insecure. Neurotic individuals support “liberal economic policies that create ‘safety nets’ and reduce exposure to market risk” (Gerber, Huber, et al., 2010, p. 116) in order to accommodate their tendencies to experience negative affect and feelings of insecurity. Consequently, I expect that neurotic individuals will experience a functional match with economic liberalism. So far, some studies confirm that Neuroticism is positively associated with economic liberalism (Gerber et al., 2011a; Gerber, Huber, et al., 2010; Verhulst, Eaves, et al., 2012) but others fail to find any association (Carney et al., 2008, sample 6; Leeson & Heaven, 1999; Van Hiel & Mervielde, 2004, study 2).

Lastly, Extraversion embodies social and outgoing behaviour as well as the tendency to experience warm feelings and positive emotions. Gerber and colleagues (Gerber et al., 2011a; Gerber, Huber, et al., 2010) find a positive association between Extraversion and economic conservatism (but see, Carney et al., 2008, sample 6; Riemann et al., 1993; Verhulst, Eaves, et al., 2012). The conceptual understanding of the association between Extraversion and political attitudes is up to this point unclear (Gerber et al., 2011a, p. 271). I will therefore not formulate directional expectations.

To summarize, the number of studies addressing the association between economic liberalism and FFM traits is limited. Yet, the studies suggest that economic liberalism correlates positively with the traits Openness, Agreeableness and Neuroticism, and negatively with Conscientiousness.

### **3.3. Personality traits, Income and Economic Attitudes**

In the previous paragraph, I have discussed the direct associations between personality and political attitudes. Mondak and Halperin (Mondak & Halperin, 2008, p. 339) already pointed out that “full attention to the possible political significance of differences in traits will require expanded exploration of possible indirect effects” (see also, Hampson, 2012, p. 319). One possibility is to study the “situations in which personality variables may operate in concert with other factors such as demographic attributes” (Mondak, 2010, p. 110; see also, Jost et al., 2009, p. 329; Redlawsk & Tolbert, 2012). Following this suggestion, race (Gerber, Huber, et al., 2010), early childhood experiences (De Neve, 2013), state legislation (Redlawsk & Tolbert, 2012) and threat (Sibley et al., 2012) have shown to moderate the association between FFM and political attitudes. In this study I also move beyond the direct associations between personality and economic attitudes.

Starting point in my study is the argument by Lane (1955, p. 174), who theorized that “situations themselves provide either a broad or a narrow scope for the influence of personality” on political attitudes. The importance of personality is thereby “guided by the perceived economic, social, or political self-interest” of a person (Lane, 1955, p. 174). Lane (1955) illustrated the argument in his research on the relationship between authoritarianism and support for the welfare state among US citizens. Based upon their material self-interest, lower educated respondents supported a large welfare state, whereas their authoritarianism was unrelated to

their support for the welfare state. Higher educated respondents are not driven by an immediate material self-interest to promote the welfare state. The lack of a strong material self-interest among the higher educated makes it possible for their authoritarianism to correlate with welfare state attitudes (Lane, 1955, pp. 185–186). The argument by Lane (1955) suggests that material self-interest can constrain the association between personality traits and political attitudes.

Income is a strong indicator of material self-interest and influences economic attitudes at least to some extent (see for a review, Sears & Funk, 1991, pp. 32–39). Specifically, compared to high income earners, low income earners tend to be more supportive of a generous welfare state (Gilens, 2009; Page et al., 2013), tax cuts (Page et al., 2013; Sears & Citrin, 1985), redistribution of income (Daniel Doherty et al., 2006; Esarey, Salmon, & Barrilleaux, 2012; Kaltenthaler, Ceccoli, & Gelleny, 2008; Kluegel & Smith, 1986, Chapter 6; Rehm, 2009, 2010) as well as social policies such as health insurance (Page et al., 2013; Sears et al., 1980) and unemployment insurance (Rehm et al., 2012; Rehm, 2011). Additional support is provided by Meltzer and Richard's (1981) rational choice model, which holds that the median voter determines government policy. Specifically, voters with an income below the mean support a strong government providing a social safety net, while voters with income above the mean oppose a strong government that provides a social safety net.

Studies addressing the influence of scarcity on political attitudes support why income should moderate the association between personality traits and economic attitudes. Justesen (2011) demonstrated that poor people in Africa reported that issues such as poverty, hunger and unemployed are more important compared to more abstract and long-term issues such as AIDS. Recent experimental studies confirms that economic hardship severely limits the capacity of a person to think in abstract terms and leads persons to focus upon their most immediate needs and

short-term goals (Mani et al., 2013a, 2013b; Shah et al., 2012; Zwane, 2012). Likewise, Kraus, Piff, Mendoza-Denton, Rheinschmidt and Keltner (2012, pp. 549–550) theorized that persons with a lower income are more likely to focus upon their immediate needs, whereas persons with a higher income are motivated by internal states.

Building upon the here discussed research, I expect that among persons with lower income levels economic self-interest shapes economic attitudes, whereas their personality traits are unrelated to economic attitudes. When income increases the effects of economic self-interest on economic attitudes decreases and provides the opportunity for personality traits to correlate with economic attitudes. I argue that personality traits correlate with economic attitudes among persons with higher levels of income. Specifically, I expect that Openness is positively related to economic liberalism as the high scorers on Openness are willing to change the role of the government in a society and support equality. Conscientiousness is expected to correlate negatively with liberal economic attitudes as high scorers on Conscientiousness accept inequality and prefer the role of the government in a society to remain unchanged. Turning to Agreeableness, I predict that high scorers on Agreeableness direct their sympathy to the underprivileged and accordingly hold liberal economic attitudes. Neuroticism correlates positively with economic liberalism as the highly neurotic persons support liberal economic policies in order to buffer against the experienced negative affect and insecurity (see also, Gerber, Huber, et al., 2010). Lastly, I do not have directional expectations about the association between Extraversion and economic attitudes due to the weak and inconsistent associations documented so far.

### 3.4. Personality, Income and Economic Attitudes across Cultural Contexts

I conduct my studies in Denmark and the US. Among western countries Denmark and the US are most different systems (see for a similar logic, Klemmensen et al., 2012). Denmark is a small and egalitarian country, whereas the US is a large country with a high level of income inequality (see Table 3.1). Moreover, the US has a smaller government and less social support, whereas Denmark has a large government and a generous welfare state.<sup>24</sup> By adopting a most different system design, I can generalize the conclusions drawn in this study to other western democracies with less different systems (Przeworski & Teune, 1970, chapter 2; Slater & Ziblatt, 2013, p. 1322).

**Table 3.1** Differences between Denmark and the United States

	Denmark	United States
Population (millions)	5.5	309.3
Size of country (km <sup>2</sup> )	43,094	9,629,091
Wealth (GDP/capita, US dollars)	40,190	46,588
Equality (Gini Coefficient)	0.25	0.38
Size of government (total tax revenue / GDP)	48%	25%
Social support (gross public expenditure / GDP)	30%	19%

Source: OECD Factbook's 2010-2012

### 3.5. Methods and Analyses

The data for the *Danish sample* was collected as part of a larger study addressing the relationship between personality and political behaviour. Specifically, the study was conducted in a nationally representative web-survey of the Danish population stratified by gender, age, region and education (see, Dinesen et al., 2014, pp. 5–6). Drawing upon a sample of approximately 400,000 Danes, *Gallup Denmark* invited 8012 members to participate in the survey. Data collection occurred between May 25 and June 6 2010 and 3612 Danish adults completed the questionnaire

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<sup>24</sup> This is only a selection of the differences between Denmark and the US. A detailed discussion of all differences between Denmark and the US is beyond the scope of this study.



equalling a 45% response rate. In the *US sample* I rely upon the Common Content of the 2009 Cooperative Congressional Election Study (Ansolabehere, 2009). The CCES is an opt-in internet-based survey administered by *YouGov/Polimetrix* in the fall of 2009. The CCES was administered to a 10,543 person national stratified sample. *Yougov/Polimetrix* accounted for the fact that opt-in respondents in an Internet survey may systematically differ from the general population using a combination of matching and sampling techniques.

The dependent variable in both samples taps into economic attitudes. Previous research measuring economic attitudes used scales tapping into issues such as government spending, redistribution, federal housing, medical insurance, guaranteed jobs, and assistance to the poor (Campbell et al., 1960, Chapter 9; Converse, 1964; Feldman & Johnston, 2013, p. 6; Treier & Hillygus, 2009, p. 686; Verhulst, Hatemi, & Eaves, 2012, p. 382). In the *Danish sample* economic attitudes were measured using two items; “High income earners do not pay enough taxes” and “Income inequality is too great in this country – the greatest pay raise should be given to low income people”. Both items were scored from “agree completely” (1) to “disagree completely” (4) with a separate “don’t know” option. The items correlated highly ( $r = 0.63$ ;  $\alpha = 0.78$ ) and I created a scale ranging from conservative (right-wing) economic attitudes (0; opposition to redistribution) to liberal (left-wing) economic attitudes (1; preference for redistribution). In the *US sample* economic attitudes were measured with the following item: “The federal budget is currently running a substantial deficit. If Congress were to balance the budget it would have to consider cutting expenditures, including on defence and domestic programs such as Medicare, and raising taxes. What would you prefer more: raising taxes or cutting spending?” Respondents used a horizontal slider to indicate their preferences on a scale ranging from raising taxes (0) to spending cuts (100). I recoded the item to range from conservative economic attitudes (0; e.g., spending

cuts) through liberal economic attitudes (1; e.g., raising taxes). Supplementary Material Chapter 3.B (Table 3.B. 1) and 3.C (Table 3.C.1) provide the descriptive statistics of all the variables included in the *Danish sample* and the *US sample*.

In the *Danish sample*, FFM personality traits were measured using the 60-item NEO PI-R Short Version (Skovdahl-Hansen et al., 2004).<sup>25</sup> Each trait was measured using 12 items, such as “I work hard to achieve my goals.” All items were scored on a five-point Likert scale ranging from “totally agree” (1) through “totally disagree” (5).<sup>26</sup> In the *US sample*, personality traits were measured using the Ten-Item Personality Inventory (TIPI; Gosling et al., 2003). The TIPI measures each personality trait with two items (Gosling et al., 2003). Respondents indicated their agreement with items such as “I see myself as open to new experiences, complex” scored on a seven-point Likert scale from “disagree strongly” (1) through “agree strongly” (7).<sup>27</sup> In both samples I created a scale for each trait ranging from lowest (0) to the highest observed value of the scale (1). Note that the ten-item TIPI is a considerably shorter personality battery compared to the 60-item NEO PI-R Short Version employed in the Danish sample. However, extant research has demonstrated that the TIPI is a valid measure of the five broad FFM traits (Ehrhart et al., 2009; Furnham, 2008; Gosling et al., 2003, Table 9; Hofmans, Kuppens, & Allik, 2008; Muck, Hell, & Gosling, 2007; Rammstedt & John, 2007; Romero, Villar, Gómez-Fraguela, & López-Romero, 2012).

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<sup>25</sup> The item wording of the lower order facet Tender-Mindedness of Agreeableness might relate somewhat closely to the dependent variable. Accordingly, I exclude the two items measuring this facet from the Agreeableness dimension.

<sup>26</sup> See Supplementary Material Chapter 3.B presents all item wordings (Table 3.B.2), Cronbach’s alphas (Table 3.B. 1), factor loadings (Table 3.B.3) and correlations between the independent variables (Table 3.B.4).

<sup>27</sup> See Supplementary Material Chapter 3.C Table 3.C.1 for the Cronbach’s alphas of the traits, Table 3.C.2 for the item wording of the TIPI, and Table 3.C.3 for correlations between the personality traits in the US sample.

In the *Danish sample* household income is measured in Danish kroner per year before taxes. The 11 categories ranged from “less than 99,999 kroner before taxes” ( $\approx$  18,000 US dollars) through “more than 1,000,000 kroner before taxes” ( $\approx$  180,000 US dollars) with a separate “prefer not to say” option. In the *US sample*, household income is measured in US dollars. The 13 categories ranged from “less than 10,000 US dollars” through “150,000 US dollars or more” with a separate “prefer not to say” option. In both samples income was recoded to range from the lowest (0) to the highest (1) income level. Respondents who preferred to not report their income were excluded from the analyses (7.26 % in the Danish sample and 8.27% in the US sample).

I control for gender, age, age-squared (to allow for non-linearity in the effects of age), and ethnicity (Knutsen, 2001, 2005; Svallfors, 1997). In the Danish sample, I control whether respondents are currently employed in the public or the private sector (Blais, Blake, & Dion, 1990; Knutsen, 2001, 2005). Unfortunately, the US sample does not include an indicator of public or private sector employment, so to make the samples comparable, I restrict both samples to respondents currently in the workforce.

## **3.6. Results**

### **3.6.1. Danish sample**

I start with the discussion of the results in the Danish sample. The first model presents the results of an OLS regression model where I directly associate the FFM traits with economic attitudes controlling for gender, age (and age-squared), ethnicity and sector of employment (Table 3.2). The results of the direct association between the FFM and economic attitudes in Denmark show that Agreeableness and Neuroticism, but not Openness, are positively associated with liberal economic

attitudes, whereas Conscientiousness is negatively associated with economic liberalism (see also Gerber et al., 2011a; Gerber, Huber, et al., 2010).<sup>28</sup>

In the second model, I test my expectations whereby I simultaneously include five interaction terms in an OLS regression model, one for the interaction of each trait with income and find support for some but not all of the expectations formulated in this study. In order to assess whether income constrains the effects of personality traits on economic attitudes, I cannot look at the significant of the interaction terms as in multiple unstandardized interaction models “coefficients are not effects” (Kam & Franzese, 2007, p. 43; see also, Brambor et al., 2006, p. 72; Braumoeller, 2004, p. 818). Following directions in the literature, I have calculated the marginal effects of each personality traits on economic attitudes over the range of income along with confidence intervals, while holding all other variables at their central tendencies (Brambor et al., 2006, pp. 71–72; Braumoeller, 2004, p. 815; Kam & Franzese, 2007, pp. 61–62). I expect that among the lower income levels the confidence intervals of the marginal effect will overlap with zero so that I cannot reject the null hypothesis of no effect (Kam & Franzese, 2007, pp. 46–47). This would confirm my expectation that among low income earners there is no effect of personality on economic attitudes. I expect that among the higher levels of income the confidence intervals lie outside zero so that I can confirm my expectation that the personality traits exert an effect on economic attitudes among the higher income earners.<sup>29</sup> In order to further interpret my expectations, I also calculated the predicted economic attitudes among high and low income earners over the range of a personality trait (Kam & Franzese, 2007), while including an additional

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<sup>28</sup> The unexpected finding non-finding for the direct association between Openness and economic attitudes was also documented by Carney et al. (2008, sample 6) and Leeson and Heaven (1999)

<sup>29</sup> Supplementary Material Chapter 3.D displays that the results are robust when in a “pairwise interaction model” I control for the interactions between all the personality traits (Kam & Franzese, 2007, p. 40).

graph showing the distribution of the personality trait (Berry, Golder, & Milton, 2012).<sup>30</sup> Note that the model estimates are provided in model 2 of Table 3.2. I have calculated marginal effects for all five traits over the range of income, however, I only project the marginal effects which yield significant effects, while I discuss the unexpected findings in detail in the text.

Starting with Conscientiousness, I have plotted the marginal effect of Conscientiousness on economic liberalism at different levels of income (see Figure 3.1, panel A). As expected, there is no marginal effect of Conscientiousness on economic attitudes among roughly half (53.4%; N = 966) of the respondents with an income 0.5 or lower. There is, however, a negative marginal effect of Conscientiousness among the roughly 50 percent of the respondents with higher income levels (income  $\geq 0.6$ ). In order to further interpret these effects, Figure 3.1 (panel B) presents the predicted economic attitudes for respondents with a low (5<sup>th</sup> percentile) and high income (95<sup>th</sup> percentile) conditional upon Conscientiousness. The solid line signals the low income earners have liberal economic attitudes regardless of their level of Conscientiousness. Among the high income earners Conscientiousness is related to economic attitudes as signalled by the steep downwards slope of the dashed line, whereby highly conscientious respondents have two times more conservative economic attitudes (0.21 [95% CI = 0.12, 0.31]) compared to low conscientious respondents (0.44 [95% CI = 0.34, 0.54]). These results demonstrate that low income earners have liberal economic attitudes regardless of Conscientiousness, whereas high income earners associate Conscientiousness with their economic attitudes.

Turning to Agreeableness, Figure 3.1 (panel C) displays that there is no marginal effect of Agreeableness on economic attitudes among the roughly 10 percent (9.34 %; N = 169) of the

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<sup>30</sup> Results in both samples are robust controlling for education, union membership (Kaltenthaler et al., 2008; Rehm, 2009, 2010) and religiosity (Scheve & Stasavage, 2006). See Supplementary Material Chapter 3.E.

respondents with an income of 0.2 or lower. The marginal effect of Agreeableness on economic attitudes is statistically significant and positive among 90 percent of the respondents with higher income levels (income  $\geq$  0.3). Figure 3.1 (panel D) projects the predicted economic attitudes among low (5<sup>th</sup> percentile) and high (95<sup>th</sup> percentile) income earners conditional upon the levels of Agreeableness. Low income earners support liberal economic policies regardless of their level of Agreeableness as signalled by the almost horizontal solid line. Among high income earners low scorers on Agreeableness hold conservative economic attitudes (0.14 [95% CI = 0.06, 0.21]), whereas high scorers on Agreeableness have more liberal economic attitudes (0.51 [95% CI = 0.43, 0.58]). These findings support that low income earners hold liberal economic attitudes irrespective of Agreeableness, whereas the high income earners relate Agreeableness to economic attitudes.

Contrary to the predictions, inspection of the marginal effects suggests that the association between Neuroticism and economic liberalism is not moderated by income. However, I observe a direct association between Neuroticism and economic attitudes, whereby neurotic respondents have more liberal economic attitudes (0.61 [95% CI = 0.56, 0.65]) compared to low neurotic respondents (0.44 [95% CI = 0.39, 0.48]).

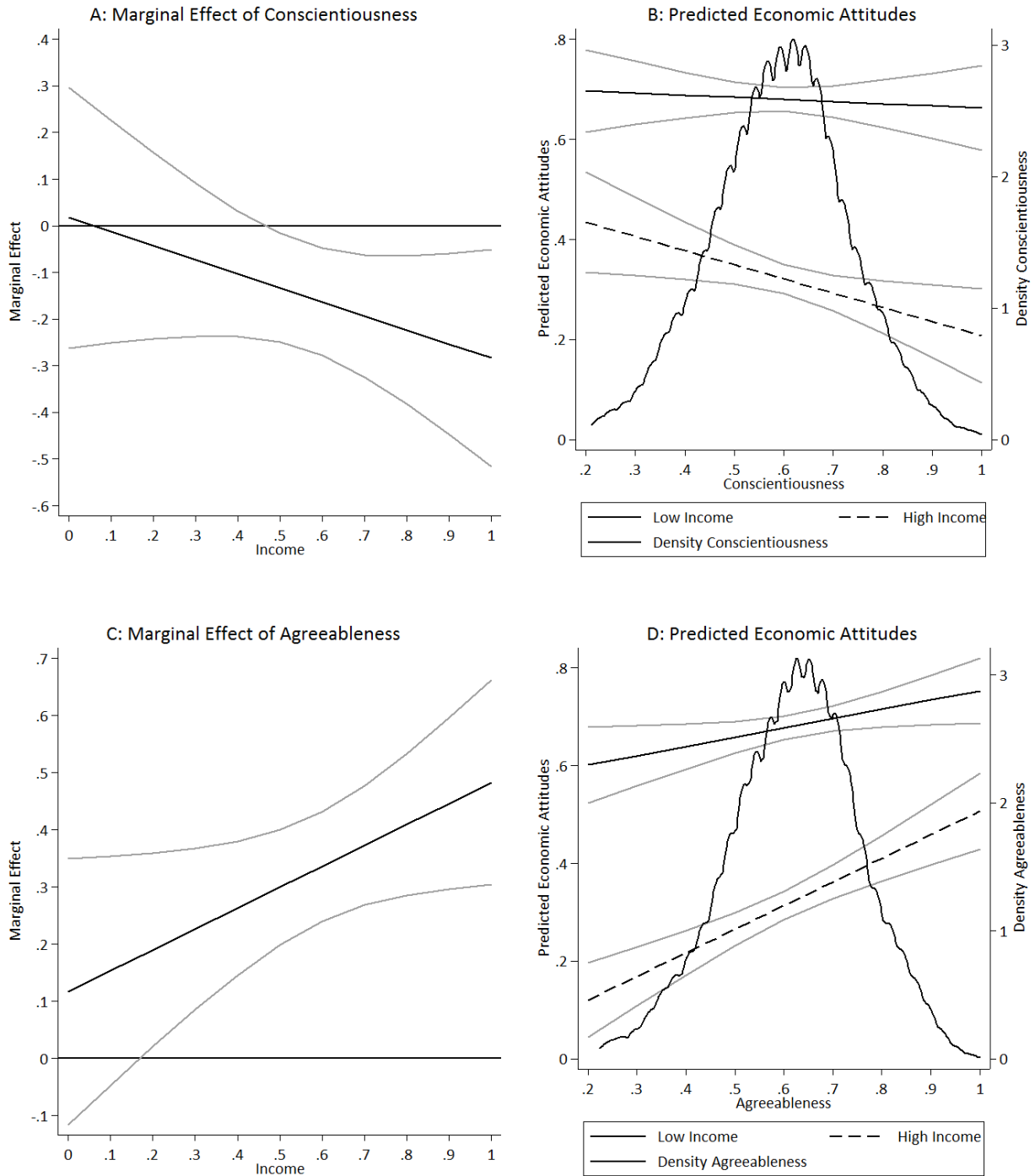
Also unexpectedly, income does not moderate the association between Openness and economic attitudes. Instead, respondents high on Openness have somewhat more liberal economic attitudes (0.58 [95% CI = 0.53, 0.62]) compared to respondents low on Openness (0.47 [95% CI = 0.43, 0.51]).<sup>31</sup> Extraversion is unrelated to economic attitudes.

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<sup>31</sup> The Danish sample also consisted of personal income and social class as measures of material self-interest. The conclusions drawn in this study are replicated when household income is substituted for personal income or social class (see Supplementary Material Chapter 3.F). The US sample did not contain measures of personal income and social class. In order to compare the results between the two cultural contexts, I present the results for household income in the main text.

Lastly, the covariates demonstrate that public sector employees and older people tend to be more in support of liberal economic attitudes

**Figure 3.1** Panel A Reports the Marginal Effect of Conscientiousness on Economic Attitudes at different levels of Income. Panel B Reports the Predicted Economic Attitudes among the Low and High Income Earners at different levels of Conscientiousness (*Danish sample*)



**Table 3.2** Personality, Income and Economic Attitudes (*Danish sample*)

	1	2
Openness	0.08 (0.05)	-0.01 (0.11)
Conscientiousness	-0.20* (0.06)	0.02 (0.14)
Extraversion	0.04 (0.06)	0.19 (0.14)
Agreeableness	0.36* (0.06)	0.12 (0.12)
Neuroticism	0.30* (0.06)	0.21 (0.14)
Income		-0.49 (0.28)
Female	-0.02 (0.01)	-0.01 (0.01)
Age	0.02* (0.00)	0.03* (0.00)
Age <sup>2</sup> /100	-0.01* (0.00)	-0.03* (0.00)
Ethnicity (Ref. Danish)		
Mixed	-0.07 (0.03)	-0.10* (0.03)
Non-Danish	0.05 (0.07)	0.01 (0.05)
Public sector employee	0.10* (0.01)	0.08* (0.01)
Personality X Income		
Openness X Income		0.23 (0.19)
Conscientiousness X Income		-0.30 (0.23)
Extraversion X Income		-0.21 (0.23)
Agreeableness X Income		0.37* <sup>Δ</sup> (0.19)
Neuroticism X Income		0.01 (0.23)
Constant	-0.18 (.12)	-0.34 (0.19)
N	1904	1808
R <sup>2</sup>	0.11	0.23

OLS regression coefficients with robust standard errors are reported in the parentheses.

<sup>Δ</sup> I am primarily interested in the effect of personality over the range of income. Following Brambor et al. (2006, p. 71), I cannot assess my expectations judging the significance of the interaction effects. I have calculated the marginal effect of a personality trait over the range of income in order to assess my hypotheses and present these results in Figure 3.1

\*  $p < 0.05$



### 3.6.2. US Sample

Turning to the US sample, liberal economic attitudes are positively associated with Openness, Agreeableness and Neuroticism, but negatively associated with Conscientiousness (see Table 3.3, model 1).<sup>32</sup> Gerber et al. (2011a) demonstrated, using a different set of covariates, a similar pattern using the CCES 2009. Here, I move beyond the direct associations in order to test my expectation that personality traits are only associated with economic attitudes among people who are not constrained by their material self-interest.<sup>33</sup>

Like in the *Danish sample*, the marginal effect of Conscientiousness on economic attitudes does not significantly differ from zero for roughly 11% (N = 581) of the respondents with a low income (income < 0.31; see Figure 3.2, Panel A). However, there is a negative and statistically significant marginal effect of Conscientiousness on economic attitudes among roughly 90 percent of the respondents with higher income levels. I project the predicted economic attitudes among respondents with low (5<sup>th</sup> percentile) and high (95<sup>th</sup> percentile) income at different levels of Conscientiousness in Figure 3.2 (panel B). Specifically, among low income earners Conscientiousness does not exert an effect on economic attitudes as signalled by the solid horizontal line. In contrast, among high income earners, the steep slope of the dashed line signals Conscientiousness is associated with economic attitudes and changes from modestly conservative economic attitudes among low conscientious respondents (0.42 [95% CI = 0.38, 0.45]) to 1.5 times

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<sup>32</sup> The measure of economic attitudes is censored at low and high values. Results of a two-limit Tobit model do not change conclusions drawn in this study. See Supplementary Material Chapter 3.G.

<sup>33</sup> Gerber et al. (2011) reported that the effects of personality traits on political attitudes are conditioned by race. The results in this study remain robust when controlling for the interaction between race and personality traits. See Supplementary Material Chapter 3.H

more conservative economic attitudes among highly conscientious respondents (0.28 [95% CI = 0.26, 0.30]).

Similar to the *Danish sample*, Figure 3.2 (panel C) displays that there is no statistically significant marginal effect of Agreeableness on economic attitudes among 27% (N = 1,381) of the respondents with income below 0.38, whereas there is a positive marginal effect of Agreeableness among the high income earners (income  $\geq$  0.38). In order to interpret these marginal effects, panel D (Figure 2) projects the predicted economic attitudes among low (5<sup>th</sup> percentile) and high (95<sup>th</sup> percentile) income earners conditional upon Agreeableness. Low income earners have modestly conservative economic attitudes independently of Agreeableness. Among the high income earners, low agreeable respondents have more conservative economic attitudes (0.27 [95% CI = 0.24, 0.29]) compared to the high agreeable respondents (0.37 [95% CI = 0.35, 0.40]).

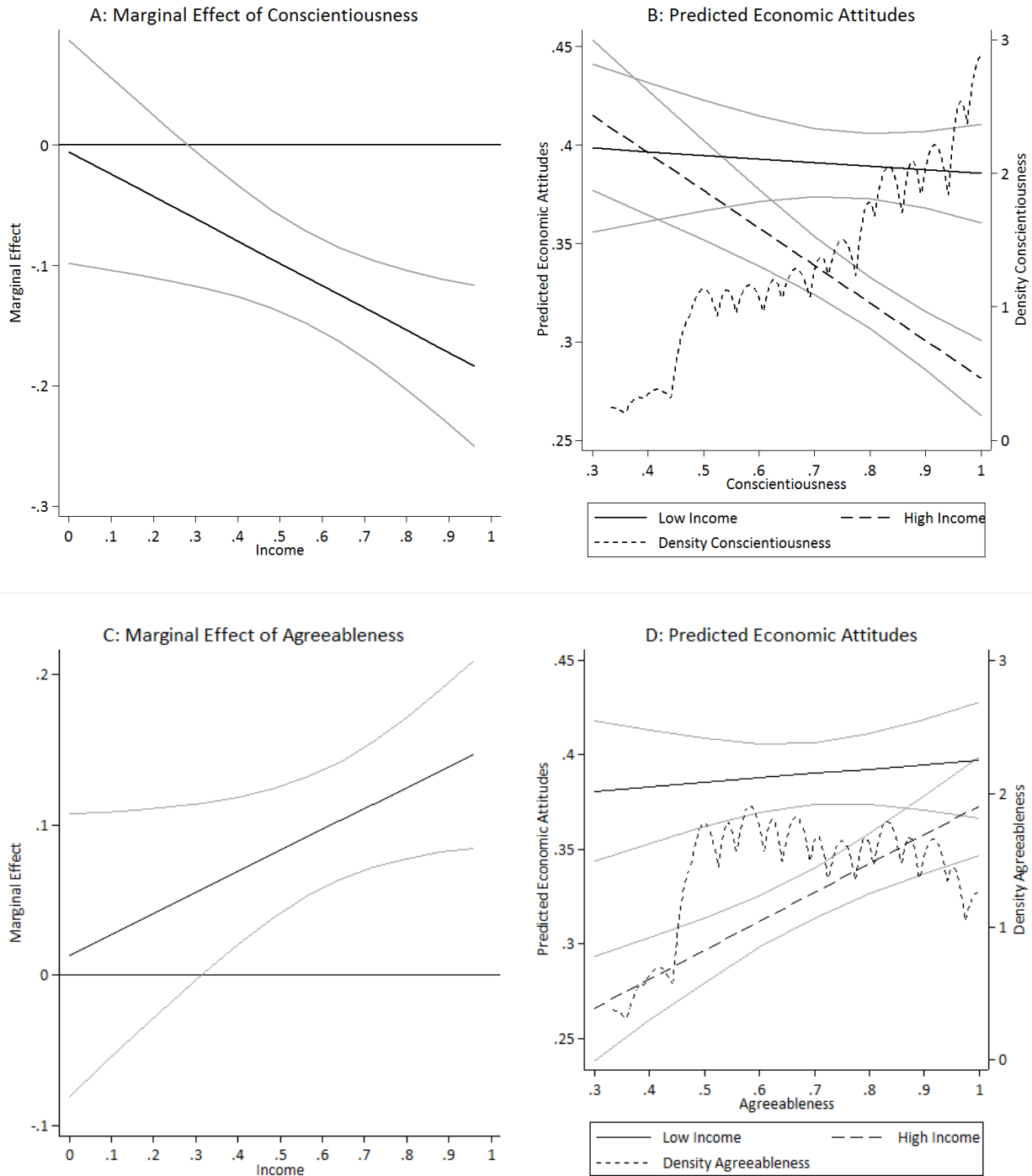
As projected in Figure 3.2 (panel E) there is no statistically marginal effect of Neuroticism on economic attitudes among roughly 7% (N = 346) of the respondents with an income below 0.23, whereas there is a positive and significant marginal effect among respondents with a higher income. Figure 3.2, panel F, projects the predicted economic attitudes among low (5<sup>th</sup> percentile) and high (95<sup>th</sup> percentile) income earners conditional upon Neuroticism. Low income earners have modestly conservative economic attitudes independently of Neuroticism. Among the high income earners a different pattern is observed. Low scorers on Neuroticism have somewhat more conservative economic attitudes (0.30 [95% CI = 0.27, 0.32]) compared to neurotic respondents (0.36 [95% CI = 0.33, 0.40]). The effects for Neuroticism are modest but confirm that low income earners have economic attitudes independently of Neuroticism, whereas high income earners connect Neuroticism with their economic attitudes.

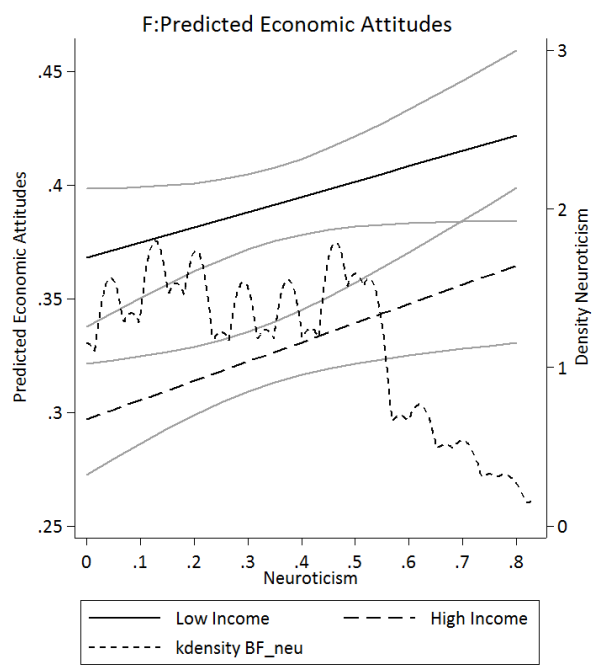
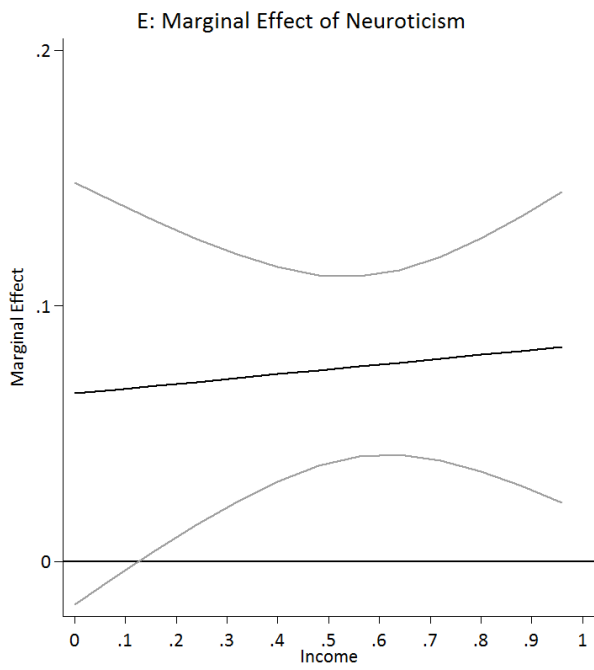
In line with the Danish sample, the association between Openness and economic attitudes is independent of income. Respondents low Openness have more conservative economic attitudes (0.31 [95% CI = 0.29, 0.32]) compared to persons high on Openness (0.39 [95% CI = 0.39, 0.40]).

Extraversion is negatively associated with economic liberalism and this association is independent of income. In line with earlier research, Extraversion is thereby inconsistently associated with economic attitudes across my two samples.

The covariates in the US sample (see, Table 3.3) show a different pattern compared to the Danish sample. Woman, young people, as well as Blacks and Hispanics tend to have more liberal economic attitudes.

**Figure 3.2** Marginal Effect of Conscientiousness, Agreeableness and Neuroticism on Economic Attitudes at different levels of Income. As well as the Predicted Economic Attitudes among the Low and High Income Earners at different levels of Conscientiousness, Agreeableness and Neuroticism (*US sample*)





**Table 3.3** Personality, Income and Economic Attitudes (*US sample*)

	1	2
Openness	0.11* (0.02)	0.08 (0.05)
Conscientiousness	-0.13* (0.02)	-0.01 (0.05)
Extraversion	-0.04* (0.01)	0.02 (0.04)
Agreeableness	0.10* (0.02)	0.01 (0.06)
Neuroticism	0.09* (0.02)	0.07 (0.05)
Income		-0.03 (0.09)
Female	0.05* (0.01)	0.05* (0.01)
Age	-0.01* (0.00)	-0.01* (0.00)
Age <sup>2</sup> /100	0.01* (0.00)	0.01* (0.00)
Ethnicity(ref. White)		
Black	0.11* (0.01)	0.10* (0.01)
Hispanic	0.04* (0.01)	0.04* (0.01)
Other	-0.03 (0.02)	-0.03 (0.01)
Employment Status (ref. Full-Time)		
Part-time	0.00 (0.01)	0.01 (0.01)
Personality X Income		
Openness X Income		0.07 (0.07)
Conscientiousness X Income		-0.19* <sup>Δ</sup> (0.07)
Extraversion X Income		-0.07 (0.05)
Agreeableness X Income		0.14 (0.07)
Neuroticism X Income		0.02 (0.07)
State fixed effects	Yes	Yes
Constant	0.50* (0.04)	0.50* (0.05)
N	5457	5109
R <sup>2</sup>	.09	.09

OLS regression coefficients with robust standard errors and state fixed effects (not shown in the table but available upon request) are reported in the parentheses.

<sup>Δ</sup> I am primarily interested in the effect of personality over the range of income. Following Brambor et al. (2006, p. 71), I cannot assess my expectations judging the significance of the interaction effects. I have calculated the marginal effect of a personality trait over the range of income in order to assess my hypotheses and present these results in Figure 3.2

\*  $p < 0.05$

### 3.7. Discussion

In this study, I first report evidence that citizens who prefer liberal economic policies tend to agreeable, neurotic but not very conscientiousness. However, moving beyond these direct associations, I conclude that lower income earners hold liberal economic attitudes regardless of the FFM traits Conscientiousness, Agreeableness and, in the US, Neuroticism. The results thereby provide evidence that material self-interest exerts strong effects on economic attitudes. Among the higher income earners, the direct need for liberal economic policies is lower and as expected, FFM personality traits correlate with economic attitudes (see also, Lane, 1955). Specifically, I conclude that high income earners with low Conscientiousness or high Agreeableness have more liberal economic attitudes compared to high income earners with low Agreeableness or high Conscientiousness. These effects are remarkably similar across the most different systems Denmark and the US and suggest the reported effects generalize to other western democracies. Moreover, the more neurotic high income earners have more liberal economic attitudes compared to low income earners but the effect is limited to the US. In line with previous research, Extraversion is inconsistently related to economic attitudes (Carney et al., 2008; Gerber, Huber, et al., 2010; Verhulst, Eaves, et al., 2012). Lastly, the results for Openness are murky as the trait was not directly correlated with economic attitudes in Denmark.

The results of this study indicate paths for future research. I report inconsistent associations between Neuroticism, income and economic attitudes across political context. These differences could be explained by differences in the measurement of personality and economic attitudes across the two samples. This explanation seems unlikely for three reasons. Firstly, the measures of the dependent variable in both studies tap into the economic attitude dimension (Feldman & Johnston, 2013; Treier & Hillygus, 2009). Secondly, the TIPI and the NEO PI-R Short Version are

highly correlated and measure the same broad FFM traits (Ehrhart et al., 2009; Furnham, 2008; Gosling et al., 2003; Hofmans et al., 2008; Rammstedt & John, 2007). Thirdly, I have reported consistent relationships between the other FFM traits, income and economic attitudes. Alternatively, the inconsistent findings for Neuroticism could be attributed to the contextual differences between Denmark and the US. Future research should systematically address to what extent the different effects of Neuroticism may be attributed to measurement related issues or signals there are contextual differences.

The relationship between personality traits and economic attitudes could be mediated by income. Specifically, Conscientiousness and Extraversion correlate positively with income, whereas Agreeableness and Neuroticism correlate negatively with income (Judge, Higgins, Thoresen, & Barrick, 1999; Ng, Eby, Sorensen, & Feldman, 2005; Sutin, Costa, Miech, & Eaton, 2009). I have tested to what extent the association between personality traits and economic attitudes are mediated by income in the Danish and the US sample. The results in both samples show that only a small proportion of the effect of personality on preferences for economic attitudes is mediated through income.<sup>34</sup> Consequently, the influence of income as a mediator is small.

The line of reasoning outlined in this paper could be further strengthened by exogenously manipulating material self-interest. Studies using lab experiments (Barber et al., 2013), and field experiments (Daniel Doherty et al., 2006; Shah et al., 2012) have provided examples how random assignment of income could be achieved. Doing so, it would be possible to further disentangle the causal effect of material self-interest in constraining the association between personality and economic attitudes.

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<sup>34</sup> See mediation analyses in Supplementary Material Chapter 3.I.



In this paper, I have demonstrated that material self-interest can constrain the association between personality and political attitudes. Close inspection of the marginal effects of the traits over the range of income (see Figure 3.1 and Figure 3.2) suggests that different traits exert an effect on economic attitudes at different levels of income. These differences are observed across traits and across political contexts. Further research will have to assess when material self-interest exactly constrains the association between personality and economic attitudes and when personality exert an effect on economic attitudes.

To summarize, this study demonstrated that personality traits are associated with economic attitudes across political context. However, I expand the understanding of the direct relationship by showing that economic self-interests crowd out the associations economic attitudes and personality traits (see also Lane, 1955) among the low income earners but not among the higher income earners. In doing so, I expands the existing theories addressing the direct relationship between personality and political attitudes (Gerber et al., 2011a; Jost et al., 2009; Mondak & Halperin, 2008). Therefore this study may spark further work to understand the roots of economic attitudes.

#### 4. Blowing in the wind? Openness to Experience and Political Persuasion<sup>35</sup>

##### **Abstract**

Are some people more persuadable than others? Psychological dispositions could condition the general tendency to be persuadable. Alternatively, persuasion occurs when the content of the persuasive appeal resonates with the motives rooted in a psychological disposition. Both perspectives have been used to explain the importance of the Five Factor Model personality trait Openness to Experience in the study of political persuasion. Persons high on Openness are open-minded, have unconventional thoughts, and are curious and should therefore be more persuadable. Alternatively, persuasion occurs when the content of the persuasive message resonates with the motives rooted in high or low levels of Openness. In two survey-experiments, I do not find evidence that persuasion occurs when the content of the message resonates with the motives rooted in Openness. Moreover, I fail to find support for the alternative expectation that Openness underlies a general persuasibility. The implications for the understanding of the role of Openness and psychological dispositions in political persuasion are discussed.

**Keywords:** Openness to Experience, Persuasion, Punitive Attitudes

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<sup>35</sup> The paper following from this dissertation chapter will be submitted to the *Political Behavior* or the *Journal of Experimental Political Science* in February 2014. I would like to thank Robert Klemmensen and Asbjørn S. Nørgaard for providing the opportunity to conduct the experiment presented in study 2.

#### **4.1. Introduction**

“Politics, at its core, is about persuasion” (Mutz, Sniderman, & Brody, 1996, p. 2). Politicians, pundits, and the news media try to persuade citizens in order to gain support for their ideas and proposals (Lippmann, 1922; McGraw & Hubbard, 1996). Citizens are, however, not mere receivers of persuasive appeals. For instance, political sophistication (Slothuus, 2008; Zaller, 1992), values and beliefs (Brewer, 2001; Nelson & Garst, 2005; Peffley & Hurwitz, 2007) and psychological dispositions (Crawford, Brady, Pilanski, & Erny, 2013; Gerber et al., 2013; Lavine et al., 1999) condition the effectiveness of persuasive appeals.

In recent years, a growing body of research assessed the relationship between political attitudes and the Five Factor Model (FFM) personality traits Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism (see, Carney et al., 2008; Gerber et al., 2011a; Gerber, Huber, et al., 2010; Mondak & Halperin, 2008; Sibley et al., 2012). Moving beyond this direct association, some studies have suggested that the FFM traits could moderate the effects of persuasive appeals (Mondak & Halperin, 2008, p. 339; Mondak, 2010, p. 110). So far, this argument has only received limited attention in empirical studies using the FFM. Outside the FFM framework, more studies assessed to what extent psychological dispositions moderate the effects of persuasive appeals. Broadly this literature arrived at two competing insights. First, psychological dispositions could underlie a general persuasibility, meaning that some people are more likely to be persuaded compared to others (Eagly, 1981; Gastil et al., 2008; Hovland, Janis, & Kelley, 1953; McGuire, 1968; Nisbet et al., 2013). Alternatively, the persuasiveness of a message depends upon the extent to which the content of a persuasive appeal resonates with the motives rooted in a psychological disposition (Kam & Simas, 2010; Lavine & Snyder, 1996; Lavine et al., 1999).

In this study I focus upon the FFM trait Openness to Experience, which encapsulates a tendency to be curious, open-minded, and to have unconventional thoughts (McCrae & Sutin, 2009; McCrae, 1996). Preliminary evidence suggests that Openness to Experience might underlie a general persuasibility, whereas persuasion could also occur when the content of a message resonates with the motives of Openness. Specifically, the open-mindedness and curiosity rooted in Openness make persons high on Openness more persuadable (see, Gerber et al., 2013; Hibbing et al., 2011). Alternatively, Hirsh, Kang and Bodenhausen (2012) demonstrated that persons open to experience rated a persuasive advertisement more effective when the content of the message resonated with the goals and motives rooted in Openness to Experience.

To summarize, at this point much is unknown about the extent to which psychological dispositions moderate political persuasion. The literature has isolated two competing perspectives and these competing perspectives have also been expressed in studies focussing upon the FFM trait Openness. Given the limited evidence and the inconsistent pattern of results, this study is necessarily somewhat explorative. Here, I follow Hirsh et al. (2012) and theorize and expect that citizens are persuaded when the content of a persuasive message resonates with the motives rooted in high or low levels of Openness.

I test my expectations in two survey experiments conducted in Denmark and the Netherlands. The survey-experiments assess the tendency to change punitive attitudes after receiving a persuasive appeal tailored towards high or low levels of Openness. Punitive attitudes are part of the social attitude dimension (Stubager, 2010a; Treier & Hillygus, 2009) and less affected by elite influences compared to economic attitudes (Johnston & Wronski, 2013; Lavine, Johnston, & Steenbergen, 2012, Chapter 4). Consequently, I have designed a conservative test to study the moderating effects of Openness on the effects of political persuasion.

In the two survey-experiments, I do not find evidence that persuasion occurs when the message content resonates with the motivations rooted in Openness. However, I also fail to find evidence for the general persuasibility of Openness. The results of this study suggest that Openness might not be a moderator of persuasive appeals. I will discuss the implications of these non-findings and offer suggestions for further research.

#### **4.2. Personality and Political Persuasion**

Persuasion is the attempt “to shape public opinion” (McGraw & Hubbard, 1996) and occurs when citizens (1) receive the message, (2) pay attention to the message, (3) comprehend the message, (4) and accept the message (McGuire, 1985; see also, Zaller, 1992). Yet, “people make up their minds in different ways” (Sniderman, Brody, & Tetlock, 1991, p. 8). Individual differences in psychological dispositions make some people more persuadable compared to others. For instance, persons with low levels of self-esteem, anxiety, and intelligence are more persuadable compared to their higher level counterparts (Carment, Miles, & Cervin, 1965; Eagly, 1981; Hovland et al., 1953; Janis & Feshbach, 1954; Janis, 1954; McGuire, 1968).

In this study, I rely upon the FFM personality traits which Costa and McCrae (1995, p. 23) defined as “multifaceted collections of specific cognitive, affective and behavioural tendencies.” The FFM traits develop in early childhood (Edmonds et al., 2013), have a heritable component (Yamagata et al., 2006), are relatively stable over time (Roberts & DelVecchio, 2000), and replicate across cultures (Schmitt et al., 2007). This paper centres on the FFM trait Openness to Experience which encapsulates a preference for art and beauty, sensitivity to feelings, willingness to try new activities, curiosity, consider new ideas, and to re-evaluate one’s social and political beliefs (McCrae & Sutin, 2009; McCrae, 1996). Persons low on Openness lack an interest in art, act

predictable, prefer familiarity, are closed-minded, lack curiosity, and are less willing to reconsider new ideas. Importantly, each FFM trait consists of six lower order facets which capture specific parts of the variance of the higher order traits. In other disciplines facets have been shown to be stronger predictors of behaviour compared to the higher order traits (Paunonen & Ashton, 2001; Paunonen & Jackson, 2000; Roberts et al., 2005). The facet Openness to Ideas is of particular interest for the study of political persuasion. Persons high on the facet Openness to Ideas have unconventional thoughts, are nonconforming, curious, and willing to consider new ideas, whereas persons low on Openness to Ideas are conventional, conforming, have a limited range of interest, and are not curious (McCrae, 1987, 1996). It is likely that the curiosity and open-mindedness rooted in Openness to Ideas drives the general persuasibility of Openness.

Openness is related to a wide variety of political attitudes and behaviours (Gerber et al., 2011a; Mondak & Halperin, 2008). For instance, Openness is positively correlated with liberal political attitudes (see for a meta-analysis, Sibley, Osborne, & Duckitt, 2012). Moreover, persons high on Openness are more interested in politics and gather more information about politics (Gerber, Huber, Doherty, & Dowling, 2011b; Kraaykamp & van Eijck, 2005; Mondak & Halperin, 2008). Two recent studies report that Openness underlies a general persuasibility. In their study of political discussion, Hibbing et al. (2011, p. 619) conclude that persons high on Openness are “more influenced by the people with whom they discuss politics.” Gerber et al. (2013) directly test to what extent Openness moderates the effectiveness of different get-out-to-vote messages and report that persons high on Openness tend to be responsive to get-out-to-vote messages independently of the specific message-content. Consequently, Gerber et al. (2013, p. 689) conclude that Openness underlies a “broad persuasibility.”

Psychological dispositions related to Openness, such as Dogmatism (Mondak & Halperin, 2008, p. 355), the Need for Cognitive Closure (Onraet, Van Hiel, Roets, & Cornelis, 2011), and the Need for Cognition (Fleischhauer et al., 2010) support that Openness captures a general persuasibility. First, dogmatic individuals are less persuadable because they ignore, minimize, or selectively forget any information that is inconsistent with held beliefs (Davies, 1993; Rokeach, 1960; but see, Gibson, 1998, p. 841). Persons low on the Need for Cognitive Closure are open-minded and use new information before making a decision and are therefore easier to persuade, whereas persons high on the Need for Cognitive Closure are closed-minded and have a tendency to discount new information and rely upon prior attitudes (Kruglanski, 2004; Nisbet et al., 2013). Lastly, persons high on the Need for Cognition are more persuadable as they are curious, seek new information, base judgments upon rational considerations, and are receptive to counter-attitudinal information (Arceneaux & Vander Wielen, 2013; Cacioppo, Petty, Feinstein, & Jarvis, 1996, p. 214; Petty & Cacioppo, 1986).<sup>36</sup> To summarize, research inside and outside the FFM framework suggests that persons with high levels of Openness are more persuadable compared to persons low on Openness.

#### **4.3. Message-Person Congruence in Political Persuasion**

The above discussed literature theorized that Openness would moderate the effects of persuasive appeals independently of the content of these appeals. Alternatively, “[c]ommunicators are more apt to be successful if they match messages to individual’s personality styles” (Perloff, 2008, p. 309). Specifically, some scholars have theorized that persuasive messages are especially effective

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<sup>36</sup> The Need for Cognition might conditions the responsiveness to policy information but evidence is inconsistent (Bullock, 2011; Holbrook, 2006; Kam, 2005).

when the message resonates with the motivational and cognitive characteristics rooted in psychological dispositions (Hirsh et al., 2012; Lavine & Snyder, 1996; Lavine et al., 1999). For instance, persons high on authoritarianism that receive a threatening message are more likely to vote (Lavine et al., 1999) and selectively process information (Lavine et al., 2005). Likewise, risk-averse citizens tend to prefer policies with a certain outcome and vote for the incumbent candidate during elections, whereas risk-taking individuals tend to support risky policies and vote for challenger candidates (Eckles, Kam, Maestas, & Schaffner, 2013; Kam & Simas, 2010, 2012).

Outside of politics, consumers are more persuaded by messages that resonate with the motivational orientation to promote gains or avoid losses (Cesario, Higgins, & Scholer, 2008; Higgins, 1998). Similarly, persons high on approach behaviour changed their habits after being exposed to a message stressing the gains of changing habits, whereas persons high on avoidance behavior were more affected by messages stressing the potential losses of not changing habits (Sherman, Mann, & Updegraff, 2006; Updegraff, Sherman, Luyster, & Mann, 2007). Applying this message-person congruence to the FFM personality traits, Wheeler, Petty and Bizer (2005, p. 789) reported that extraverts, who are outgoing and social, were more persuaded to buy a VCR when an advertisement stressed the social benefits of the product, whereas introverts were more persuaded by an advertisement stressing that the VCR makes it possible to avoid social contacts. Similarly, Hirsh et al. (2012) reported that persons high on Openness indicated that a mobile phone advertisement was more effective when it was described in terms of a tool which assists in the gathering of new information, promotes new ideas, and creates opportunities to try out new activities. To summarize, studies inside and outside the FFM framework suggest that persuasion occurs when the content of the persuasive message resonates with the motives rooted in a personality trait.



#### **4.4. Expectations**

Two competing insights characterize the understanding of the role of Openness in political persuasion. Some studies demonstrate that persons high on Openness are generally more persuadable (see for instance, Gerber et al., 2013; Hibbing et al., 2011). Alternatively, persuasion occurs when the message is congruent with the motivations rooted in Openness (Hirsh et al., 2012) and this argument is supported by studies outside the FFM framework using different psychological dispositions (see for instance, Kam & Simas, 2010; Lavine & Snyder, 1996; Lavine et al., 1999; Updegraff et al., 2007). Here, I follow the latter perspective and expect that persons high on Openness are persuaded by messages stressing the importance of change and presenting unconventional ideas, whereas persons low on Openness are persuaded by messages which stress conventionality, conformity and familiarity.

#### **4.5. Research Design**

I report the results of two survey experiments intended to change punitive attitudes. The experiments were conducted in Denmark and the Netherlands which are comparable western European countries where the public on average holds harsh punitive attitudes (see Supplementary Material Chapter 4.A, Figure 4.A. 1). Study 1 tests whether punitive attitudes are influenced by persuasive appeals tailored towards the high or low levels of Openness using a framing experiment conducted in the Netherlands. Study 2 reports the results of a counterargument experiment conducted in Denmark and tests to what extent persons high on Openness change attitudes when a persuasive appeal resonates with the motives of Openness.

The focus upon the social attitude dimension provides a conservative test to study political persuasion as social issues are less susceptible to elite influences compared to economic issues (Goren, Federico, & Kittilson, 2009; Johnston & Wronski, 2013; Lavine et al., 2012, Chapter 4).

## **4.6. Study 1: Framing Experiment**

### **4.6.1. Methods**

*Participants.* Members of the LISS panel (Longitudinal Internet Studies for the Social Science) were recruited to participate in the experiment. The LISS panel is an ongoing monthly panel-study in the Netherlands that consists of a probability sample of 8,000 Dutch adults in nearly 5,000 households (see for a detailed discussion of the LISS panel, Binswanger et al., 2013; Scherpenzeel & Das, 2010). A random sub-sample of 588 panel members were invited to participate in the experiment between October 10 and October 27, 2010, and 428 persons responded to this invitation (72.8% response rate). The descriptive statistics of the sample are provided in the Supplementary Materials of Chapter 4.B (Table 4.B.1).

*Procedure.* The experiment was a four-group posttest-only randomized experimental design whereby participants received some information about alternative forms of punishment after which they expressed their punitive attitudes. Table 4.1 provides item wording of the four conditions.<sup>37</sup>

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<sup>37</sup> The experiment was originally conducted by Van Gelder, Aarten, Lamet and van der Laan (2011) who concluded that the different frames did not affect punitive attitudes. The data is publicly accessible via [www.lissdata.nl](http://www.lissdata.nl).

**Table 4.1** Item-Wording Experiment Study 1

Condition	Wording
<i>Baseline</i>	A judge can decide to suspend a sentence partially or entirely. A suspended sentence is a sanction that is not executed if the offender complies with certain conditions. When the offender commits a new offence or fails to comply with the special conditions of a probation period of up to 3 years, the sentence will in principle be executed. Examples of special conditions are a contact or site ban, entering a rehabilitation program or behavioral training, treatment in a facility, or supervision by the Probation Service.
<i>Change</i>	<i>Baseline text</i> + -> An important goal of the suspended sentence is contributing to behavioral change. By imposing special conditions, the criminal justice system actively aims to improve the behavior of offenders. The criminal justice system also attempts to impose sentences specifically tailored to suit the offender and the offence. The suspended sentence is therefore an individualized sanction aimed at reducing future criminal behavior.
<i>Conventionality</i>	<i>Baseline text</i> + -> Because noncompliance with either the general condition or one or more of the special conditions leads to a revocation of the sentence, the suspended sentence has a threatening character. The impact of the special conditions that are frequently imposed can be profound and are supervised (by the Probation Service) to monitor compliance. In addition, when the offender commits a new crime (during his probation period), he will also be sentenced for this new act. The suspended sentence therefore retains its punitive character.
<i>Combined</i>	Baseline + Change + Conventionality

*Measures.* The dependent variable consists of five items measuring punitive attitudes, such as “It is better to incarcerate persistent offenders for longer periods since this will prevent future crimes from taking place” (See Supplementary Material Chapter 4.B, Table 4.B.2 for item wording). Items were scored on a five-point Likert-scale ranging from “totally disagree” (1) through “totally agree” (5). The five items have a high internal consistency ( $\alpha=0.87$ ), and I created a scale ranging from soft punitive attitudes (0) through harsh punitive attitudes (1).

Personality traits were measured in May 2009 using 10-items that were part of a 50-item FFM personality battery (Goldberg, 1992; Goldberg et al., 2006).<sup>38</sup> Respondents were asked to rate a series of statements which describe themselves, such as “I have a rich vocabulary” (See item wording in Supplementary Material Chapter 4.B, Table 4.B.3). Responses were scored on a five-point Likert-scale ranging from “very inaccurate” (1) through “very accurate” (5). The items were internally consistent ( $\alpha=0.74$ ).<sup>39</sup>

*Expectations.* In the *change* condition participants received information about the fact that suspended sentences are a “contribution to behavioural change” and that suspended sentences intent to “improve behaviour of offenders” by offering a program “tailored towards the offender” (Table 4.1, panel 2). I expect that this information resonates with high levels of Openness due to the focus upon the change of behaviour and the unconventional, and complex proposal to impose suspended sentences to achieve this goal (Block, 2010, pp. 20–21; McCrae & Sutin, 2009). In the *conventionality* condition participants were informed that a conditional sentence does not differ from prison sentences and that it “remains its punitive character” (see Table 4.1, panel 3). Punitive attitudes of participants low on Openness are more affected by this message as they prefer familiarity and conventionality (Block, 2010, pp. 20–21; McCrae & Sutin, 2009). I expect that high scorers on Openness express softer punitive attitudes in the *change* condition compared to the *conventionality* condition. Participants low on Openness, however, express softer punitive

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<sup>38</sup> If participants did not fill out the Openness battery in May 2009, then I included measures of Openness collected in May 2010 or May 2011 as part of the ongoing panel study. In doing so, I limit the number of participants that are excluded from the analyses due to missing values on the independent variable.

<sup>39</sup> The measure of Openness employed in this study is based upon the lexical tradition in personality psychology. Contrary to the FFM, the lexical tradition does not make a distinction between higher order traits and lower order facets (Costa & McCrae, 1992b, 1995; Digman, 1990; Goldberg, 1992; Goldberg et al., 2006). Therefore, I cannot not isolate the facet Openness to Ideas in this experiment.

attitudes in the *conventionality* condition compared to the *change* condition. Note that I cannot formulate directional hypotheses for the *combined* condition as this treatment combines both the *conventionality* condition and the *change* condition (Table 4.1, panel 4).

*Analysis strategy.* I subject Openness to a tercile split given the low numbers of observations in each condition (see for a similar approach, Taber & Lodge, 2006, p. 760). Using a series of t-tests, I test whether the punitive attitudes differ among participants in the lowest tercile and high tercile on Openness receiving in the *change* condition or in the *conventionality* condition. I did not have expectations about the effects of the treatments among the middle tercile of Openness and do not present the results for this group in this chapter. Supplementary Material Chapter 4.C (Figure 4.C.1) displays the results for the participants among the middle tercile of Openness.

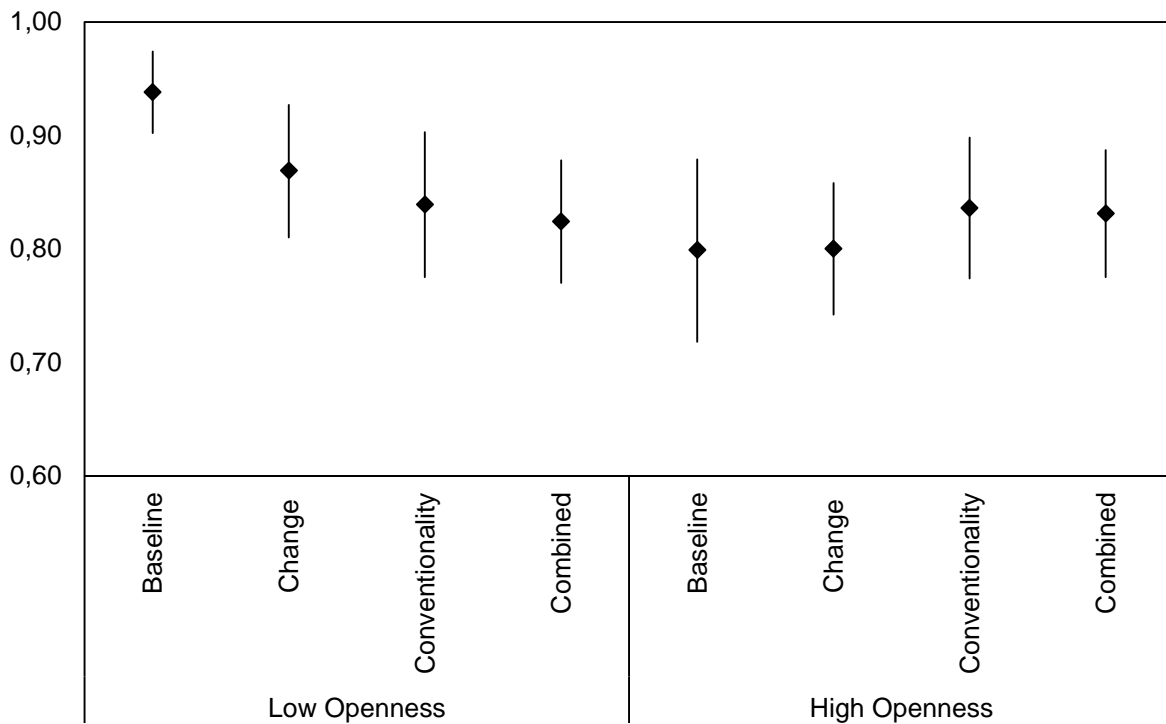
#### **4.6.2. Results**

Contrary to my expectations, participants low on Openness did not ( $t_{67}=0.64$ ,  $p = ns$ ) express softer punitive attitudes in the *conventionality* condition ( $M=0.84$ ;  $SD=0.21$ ) compared to the *change* condition ( $M=0.87$ ;  $SD=0.15$ ) (see also Figure 4.1, left-hand panel). Next, I turn to high scorers on Openness. Contrary to my expectations, participants high on Openness also did not ( $t_{75}=-0.85$ ,  $p = ns$ ) express softer punitive attitudes in the *change* condition ( $M=0.80$ ;  $SD=0.19$ ) compared to participants high on Openness in the *conventionality* condition ( $M=0.84$ ;  $SD=0.18$ ) (see Figure 4.1, right hand panel). I thereby fail to find evidence for my expectation that persuasion occurs when the persuasive appeal resonates with the motives rooted in Openness. I did not have directional expectations about the *combined* condition among low and high scorers on Openness. However, the punitive attitudes expressed among participants low and high on Openness do not differ from the *change* condition and the *conventionality* condition (see Figure 4.1).

This experiment also allowed me to test the alternative expectation that Openness underlies a general persuasibility, whereby high scorers on Openness are expected to be more persuadable compared to low scorers on Openness (see, Gerber et al., 2013; Hibbing et al., 2011; Nisbet et al., 2013). If this expectation is correct, I should observe softer punitive attitudes among participants high on Openness in both the *change* condition and the *conventionality* condition compared to the participants low on Openness in these conditions. The expressed punitive attitudes among participants low on Openness in the *conventionality* condition ( $t_{67}=1.62, p = ns$ ) and the *change* condition ( $t_{77}=0.08, p = ns$ ) do not differ from the punitive attitudes among participants high on Openness in these conditions (see Figure 4.1). To summarize, I also do not find any evidence supporting the argument that Openness should underlie a general persuasibility.

The results of this experiment suggest a different pattern. In the baseline condition, the punitive attitudes among persons low on Openness ( $M=0.94; SD=0.11$ ) are harsher ( $t_{75}=3.35, p < 0.05$ ) compared to participants high on Openness in the *baseline* condition ( $M=0.80; SD=0.24$ ). This pattern demonstrates that Openness is correlated with punitive attitudes (see also, Colémont, Van Hiel, & Cornelis, 2011). Unexpectedly, the association between Openness and punitive attitudes disappears when additional information about suspended sentences is provided in the *change* and *conventionality* conditions. Specifically, participants high and low on Openness in the experimental conditions do not express different punitive attitudes. Implications of this unexpected pattern of results will be discussed in the general conclusion of this chapter.

**Figure 4.1** Punitive Attitudes among Participants Low and High on Openness



*Note:* Diamonds signal mean punitive attitudes and spikes indicate the 95<sup>th</sup> confidence intervals. In the left-hand panel of Figure 4.1, punitive attitudes are presented among participants low on Openness (bottom third) in the four conditions. In the left-hand panel the punitive attitudes are projected among the participants high on Openness (upper third) in the four different conditions.

#### **4.6.3. Conclusion**

Contrary to my expectations, persons low and high on Openness were not persuaded by information tailored towards the motivations rooted in Openness. Importantly, the results in this experiment also fail to confirm that Openness underlies a general persuasibility.

## 4.7. Study 2: Counterargument Experiment

In the second study, I address whether persons high on Openness only change attitudes when the message is congruent with the motivations rooted in the trait or whether persons high on Openness are generally more likely to change attitudes. I test this argument using a counterargument experiment (see for similar research designs in the study of political tolerance, Gibson, 1998; Petersen et al., 2010).

### 4.7.1. Methods

*Participants.* The survey-experiment was conducted by *Gallup Denmark* and fielded in September 2013 fielded to 3,170 respondents. A total of 2,289 participants participated in the study, equalling a response rate of 72.20%.<sup>40</sup>

*Procedure.* At the start of the experiment participants were asked whether they agree or disagree that “violent crimes should be punished far stricter than they are today?” The response categories were “completely agree,” “agree,” “partly agree,” “neither agree nor disagree,” “partly disagree,” “disagree,” and “completely disagree” (see distribution of the dependent variable in Supplementary Material Chapter 4.D, Table 4.D.2). Participants that agreed that violent crimes should be punished harsher were randomly assigned to one of two counterarguments intended to change the attitude towards less support for harsh punishment of violent crimes:

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<sup>40</sup> Supporting Material Chapter 4.D (Table 4.D.1) provides the descriptive statistics of the sample.



- A. *Intervention* counterargument “This issue is debated. Some people are against tougher sentences for violent crime because longer prison sentences *prevent criminals from changing and break out of their criminal careers.*”
- B. *Costs* counterargument “This issue is debated. Some people are against tougher sentences for violent crime because longer prison sentences *are costly to society.*”

Participants that disagreed with the harsher punishment of violent crimes were randomly assigned to one of two counterarguments intended to change attitudes towards support for the harsh punishment of violent crimes:

- C. *Intervention* counterargument “This issue is debated. Some people advocate for tougher sentences for violent crime because *longer prison sentences prevents criminals from continuing their criminal careers.*”
- D. *Costs-of-crime* counterargument “This issue is debated. Some people advocate for tougher sentences for violent crime because *crime is costly to society.*”

Participants answering “neither agree nor disagree” were randomly assigned to one of the four counterarguments described above. Upon receiving the counterargument, all participants were asked “with this in mind, to what extent do you agree or disagree that violent crimes should be punished much more severely?” and provided their attitude towards punishment of violent crimes on a seven-point Likert-scale ranging from “totally agree” through “totally disagree.”

*Measures.* A 12-item Openness battery, part of the Danish NEO PI-R Short Version (Skovdahl-Hansen et al., 2004), was included in the study. Openness was measured using items such as “I have little interest in speculating over the universe mysteries or man” scored on a five-point Likert scale ranging from “totally disagree” (1) through “totally agree” (5) (See Supplementary Material Chapter 4.D, Table 4.D.3 for the item wording). The Openness measure included in the counterargument experiment has a broader scope compared to Goldberg’s (1992) Openness measure included in the faming experiment. Goldberg’s Openness measure correlates strongly

with the lower order NEO PI-R facet Openness to Ideas (see, Costa & McCrae, 1995, Table 3; Goldberg, 1992, Table 6). The Openness inventory used in this study allows me to isolate the six Openness facets (Skovdahl-Hansen et al., 2004). Consequently, I will, in second study 2, test my expectations using the broad Openness measure and the lower order facet Openness to Ideas. This has two advantages. Firstly, I provide a more accurate comparison of the results of study 1 and study 2. Secondly, I can test whether the lower order facet Openness to Ideas might drive results that are suppressed in the higher order FFM trait. The 12-item Openness trait was internally consistent ( $\alpha=0.73$ ). Two of the 12-items were designed to tap into the facet Openness to Ideas (Skovdahl-Hansen et al., 2004). The two-item measure of Openness to Ideas was also internally consistent ( $\alpha=0.66$ ;  $r=0.48$ ).

*Expectations.* The *rehabilitation* counterargument stresses that harsh punishment prevents criminals from changing their behavior. I expect that the *rehabilitation* counterargument resonates with the motives rooted in Openness, as high scorers on Openness are open-minded and willing to consider new and unconventional thoughts (McCrae & Sutin, 2009; McCrae, 1996). The *cost* counterargument will not resonate with the motives rooted in Openness as arguments about money do not resonate with the motives of high and low scorers on Openness (McCrae & Sutin, 2009; McCrae, 1996). Participants that disagree with harsh punishment of crime received the *intervention* counterargument which stresses the fact that prison sentences could help change the behavior of criminals. I expect this counterargument resonates well with the high levels of Openness. The *crime-is-costly* counterargument does not resonate with the motives rooted in Openness, as concerns about money do not resonate with high and low levels of Openness.

#### 4.7.2. Results

First, I test whether participants tend to change attitudes from initial agreement with harsh punishment of violent crimes towards less agreement with harsh punishment of violent crimes. Afterwards, I analyze the change from initially disagreement with the harsh punishment of violent crimes towards more agreement with the harsh punishment of violent crimes. Here, I am primarily interested in those participants that change attitudes. Consequently, the small percentage of participants that “neither agrees nor disagrees” with the harsh punishment of violent crimes at  $T_1$  (7.73% [N=177]) are not included in the analyses.

The majority (82% [N=1,870]) of the participants expressed a preference for the harsher punishment of violent crimes and received the *rehabilitation* counterargument or the *cost* counterargument.<sup>41</sup> The dependent variable used to operationalize change in attitudes is created by subtracting the expressed attitude toward violent crime after receiving the counterargument ( $T_2$ ) from the expressed preference for violent crimes before receiving the counterargument ( $T_1$ ). A value of zero signals that participants did not change their punitive attitude between  $T_1$  and  $T_2$ . A value ranging between 1 and 6 operationalizes the change towards softer punitive attitudes on the Likert-scale compared to the position at  $T_1$ . Lastly, the values of -1 or -2 express a change towards harsher punishment of violent crimes at  $T_2$  compared to the preferences for harsh punishment of crime at  $T_1$ .

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<sup>41</sup> There is a positive association ( $r=0.36$ ) between Openness and the expressed preferences for harsh punishment of criminals (Colémont et al., 2011). Openness is, however, normally distributed among the participants who agree with the harsh punishment of violent crimes, whereas the small group of participants disagreeing with the harsh punishment of criminals scoring high on Openness (see Supplementary Material Chapter 4.D, Figure 4.D.1 and Figure 4.D.2).

Receiving the *rehabilitation* counterargument 35% (N=312) of the participants changed their attitudes one point or more, whereas 27% (N=256) of the participants changed their attitudes one point or more after receiving the *cost* counterargument. The changes in attitudes in the expected direction were modest. In total, 3.16% (N=29) of the participants in the *rehabilitation* counterargument and 1.89% (N=18) of the participants in the *cost* counterargument changed their attitudes from initially harsh punitive attitudes to soft punitive attitudes.

Only, 1.75% (N=16) of the participants that received the *rehabilitation* counterargument and 2.09% (N=20) of the participants that received the *cost* counterargument expressed harsher punitive attitudes upon receiving the counterargument. The small percentage of participants changing attitudes in opposite direction compared to the high percentage changing attitudes in the expected direction suggests that opinion change was not caused by the fact that the counterargument encouraged participants to think more about the issue and change their attitudes as the result of that process (Petersen et al., 2010, p. 594).<sup>42</sup>

I turn to multivariate analyses to test whether participants high on Openness receiving the *rehabilitation* counterargument change their attitudes more compared to participants high on Openness receiving the *cost* counterargument. I ran an OLS regression model whereby I interacted a variable indicating whether participants received the *costs* counterargument (0) or the *rehabilitation* counterargument (1) with the Openness-scale (see Table 4.1). Inspection of the

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<sup>42</sup> Alternatively, participants with high levels of Openness might be more likely to elaborate upon the issue when receiving the counterargument. If this argument is correct, I should find a positive association between Openness and a general tendency to change attitudes irrespective of the counterargument and the direction of the change in attitudes. Additional analyses among participants initially agreeing or disagreeing with the harsh punishment of violent crimes do not support this suggestion. Results are available upon request.

marginal effect and the predicted values does not suggest that Openness related to the tendency to change attitudes (Brambor et al., 2006; Kam & Franzese, 2007).<sup>43</sup>

In the second model, I included the facet Openness to Ideas instead of Openness. In order to interpret the interaction, Figure 4.2 projects the marginal effect of the *rehabilitation* counterargument at different levels of Openness to Ideas (Brambor et al., 2006; Kam & Franzese, 2007). There is no effect of the treatment among participants low on Openness to Ideas. The marginal effect of the *rehabilitation* counterargument compared to the *cost* counterargument is positive and statistically significant among participants with modest to high levels of Openness to Ideas. Specifically, participants high on Openness in the *rehabilitation* counterargument tend to change their punitive attitudes more compared to the participants high on Openness in the *costs* counterargument.<sup>44</sup>

I calculated the predicted changes in attitudes among participants low (5<sup>th</sup> percentile) and high (95<sup>th</sup> percentile) on Openness to Ideas to interpret the marginal effect. The results are plotted in Figure 4.3. I expected that high scorers on Openness to Ideas are more persuaded when the counterargument resonated with the motives rooted in Openness. Participants high on Openness to Ideas (95<sup>th</sup> percentile) receiving the *rehabilitation* counterargument (0.57 [95%CI=0.45, 0.69]) changed their attitudes more ( $p < 0.05$ ) towards softer punitive attitudes compared to participants high on Openness to Ideas receiving a *cost* counterargument (0.26 [95%CI=0.14, 0.38]). Moreover, I observe that participants low on Openness in the *cost* counterargument (0.42 [95%CI=0.31, 0.52]) and the *rehabilitation* counterargument (0.41 [95%CI=0.31, 0.52]) do not differ from each other in the predicted changes in attitudes. The results thereby confirm the expectation that

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<sup>43</sup> A plot of the marginal effect is available upon request.

<sup>44</sup> The results are robust controlling for Conscientiousness, the other FFM trait that was included in this survey as presented in Supplementary Material Chapter 4.E.

participants are more persuaded to express softer punitive attitudes when the content of the message resonates with the motives rooted in a trait. The implications of this finding are, however, limited as participants high on Openness to Ideas in the *rehabilitation* counterargument (0.57 [95%CI=0.45, 0.69]) do not change their punitive attitude more compared to participants low on Openness to Ideas receiving the *rehabilitation* counterargument (0.41 [95%CI=0.31, 0.52]) or the *cost* counterargument (0.42 [95%CI=0.31, 0.52]). To summarize, participants high on Openness to Ideas change attitudes more in the *rehabilitation* counterargument compared to participants high on Openness to Ideas in the *cost* counterargument, however, Openness to Ideas does not affect the predicted number of changes within the *rehabilitation* counterargument.

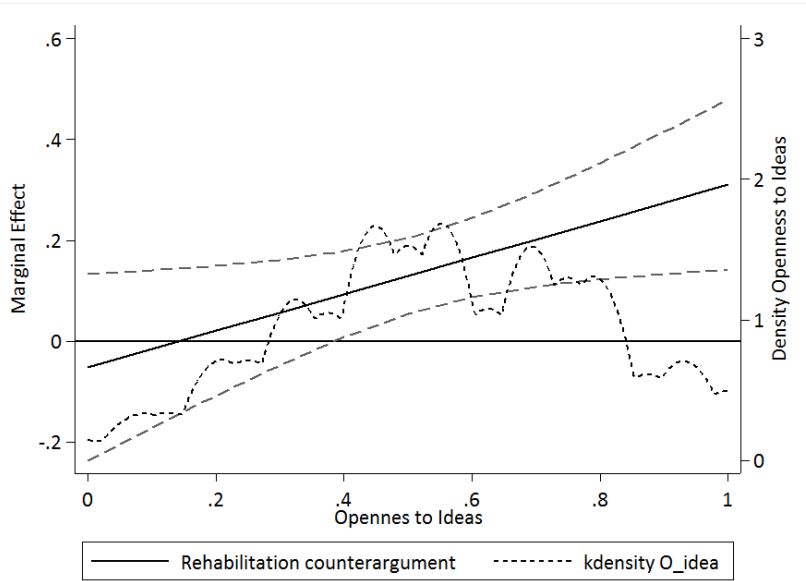
**Table 4.1** OLS Regression Model of Hypothesis Test among participants with Harsh Punitive Attitudes at T1 and their Tendency to Change to Softer Punitive Attitudes after Receiving the Counterargument

	1	2
<i>Rehabilitation</i> counterargument (ref. <i>Cost</i> counterargument)	0.16 (0.13)	-0.05 (0.09)
Openness to Experience	0.11 (0.19)	-
Openness to Ideas	-	-0.18 (0.12)
Rehabilitation X Openness	-0.04 (0.27)	-
Rehabilitation X Openness to Ideas	-	0.36* (0.16)
Constant	0.30* (0.09)	0.44* (0.07)
N	1870	1870
R <sup>2</sup>	0.01	0.01

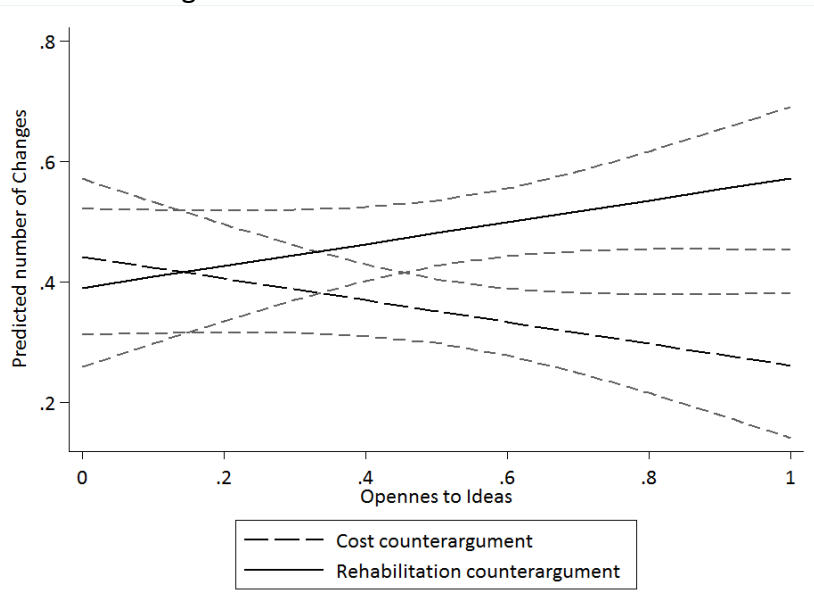
Standard errors reported in the parentheses. All variables included in the model range from 0 to 1.

\* $p < 0.05$

**Figure 4.2** Marginal Effect of the Rehabilitation Counterargument on Changes in Preferences for Harsh Punishment of Violent Crimes



**Figure 4.3** Predicted Changes in Punitive Attitudes in the Rehabilitation Counterargument and the Cost Counterargument



Next, I turn to the 10.57% (N=242) of the participants that initially disagreed with the harsher punishment of criminals. These participants were randomly assigned to one of two counterarguments intended to change attitudes towards support for harsher punishment of violent crimes. The dependent variable operationalized the change in attitudes expressed at T<sub>1</sub> compared to the expressed attitudes after receiving the counterargument at T<sub>2</sub>. The dependent variable was coded so that zero indicated no change in attitudes, positive values (1-6) indicated a change towards harsher punitive attitudes, whereas negative values operationalized a change towards softer punitive attitudes (-1 & -2).

In both counterargument conditions, a majority of the participants did not change their punitive attitudes (*intervention* counterargument: 66.67% [N=80]; *Costs-of-crime* counterargument: 68.86% [N=84]). A modest group of participants changed their attitudes and expressed harsher punitive attitudes compared to their initial position (*intervention* counterargument: 18.33% [N=22]; *Costs-of-crime* counterargument: 13.94% [N=17]). Unexpectedly, an equal percentage of the participants expressed softer punitive attitudes compared to their initial position (*intervention* counterargument: 15% [N=18]; *Costs-of-crime* counterargument: 17.21% [N=21]). The roughly equal percentages of participants changing attitudes in the expected as well as in the unexpected direction suggest that the change in attitudes might not be attributable to the counterargument per se. Instead the counterargument could have stimulated respondents to elaborate on the question and change their response based upon this elaboration (see, Petersen et al., 2010, p. 594).

Taking this into point of caution into account, I do test whether participants high on Openness were more persuaded to change attitudes in the *intervention* counterargument compared to the *crime-is-costly* counterargument. I do not expect that the different



counterarguments lead to differences in the tendency to be persuaded among low scorers on Openness. In Table 4.3, I present the results of an OLS regression model whereby I interacted Openness with the indicator of the counterargument (coded: 0= *Costs-of-crime* counterargument; 1=*intervention* counterargument). Inspection of the marginal effects and predicted values suggest that Openness was unrelated to the tendency to change attitudes (see Table 4.2, model 1). The results for Openness to Ideas resemble the results of the trait Openness (see Table 4.2, model 2).

**Table 4.2** OLS Regression Model of Hypothesis Test among participants with Soft Punitive Attitudes at T1 and their Tendency to Change to Harsher Punitive Attitudes after Receiving the Counterargument

	1	2
<i>Intervention</i> counterargument (ref. <i>Crime-is-Costly</i> counterargument)	0.34 (0.51)	0.56 (0.41)
Openness to Experience	-0.80 (0.58)	-
Openness to Ideas	-	0.44 (0.37)
Intervention X Openness	-0.31 (0.84)	-
Intervention X Openness to Ideas	-	-0.55 (0.53)
Constant	0.49 (0.36)	0.34* (0.20)
N	242	242
R <sup>2</sup>	0.03	0.04

Standard errors reported in the parentheses. All variables included in the model range from 0 to 1.  
\* $p < 0.05$

### **4.7.3. Conclusion**

I find no evidence that persuasion occurs when the content of the message resonates with the motives rooted in high or low levels of Openness. Moreover, I do not find evidence that Openness is related to general tendency to change attitudes. Turning to the facet Openness to Ideas, I find weak evidence that participants are more persuaded if they receive a counterargument congruent with the motives rooted in Openness to Ideas. However, this effect is very modest as the high scorers on Openness to Ideas do not change their attitudes more than the participants low on Openness to Ideas receiving the same counterargument.

## **4.8. Discussion**

The results of the two survey-experiments fail to find evidence supporting the argument that persuasion occurs when the content of a persuasive message resonated with the motives rooted in Openness to Experience (Hirsh et al., 2012; Kam & Simas, 2010; Lavine et al., 1999). I only found modest support for the argument when I isolated the facet Openness to Ideas in study 2. Moreover, the results of both studies do not support that persons high on Openness are more likely to be persuaded independent of the message content (e.g., Gerber et al., 2013; Hibbing et al., 2011; Nisbet et al., 2013). This study adds a third perspective, namely that Openness does not moderate the effectiveness of persuasive appeals.

In this study, I did find a suggestion that the lower order facet Openness to Ideas moderates the effectiveness of the persuasive appeal. The findings for Openness to Ideas should not be exaggerated and interpreted with caution. The Openness battery employed in the framing experiment (study 1) correlates strongly with the facet Openness to Ideas (see, Costa & McCrae, 1995, Table 3; Goldberg, 1992, Table 6) but in the framing experiment I do not find any evidence

supporting that Openness moderates the effectiveness of the frames. Consequently, more research will have to assess whether Openness to Ideas might moderate the effectiveness of persuasive appeals. However, this explorative finding for the lower order facet Openness to Ideas does confirm that it could be insightful to turn to the lower order facets to understand the effects of the FFM in politics (Feldman, 2013; Gerber et al., 2011a).

The non-findings reported in this study might be attributable to the design of the two experiments. Citizens rely less upon cues when it comes to social attitudes compared to economic attitudes (Johnston & Wronski, 2013; Lavine et al., 2012). Possibly, the expectations formulated in this study would be confirmed once the experimental design focuses upon economic issues. Conclusions about the null-findings should therefore be limited to the effects of Openness in persuasion of social attitudes, of more specifically, punitive attitudes. Further research will have to address whether the null-findings reported in this study are limited to issue addressed in these experiments or whether these null-findings generalize across attitudes.

Another explanation for the non-finding is that the experimental stimuli in both studies were not powerful enough to resonate with the motives and goals rooted in Openness. The persuasive appeals used in the study by Hirsh et al. (2012, supplementary materials) consisted primarily of words such as “active,” “imagination,” “creative,” and “discover” which directly resemble words used to measure individual differences in Openness to Experience (see for instance the item wording of the Openness battery employed in study 2 of this paper, Table 4.D.3). In my two experiments, the words used to resonate with Openness do not overlap with the words used to measure Openness. The decision to clearly isolate the wording of the treatment from the wording used to measure Openness might have limited the possibility for the treatment to resonate with

Openness. Further research could explore whether it is indeed necessary that the words of the stimulus material closely resemble the language of the FFM traits in order for persuasion to occur.

The status of the literature addressing the effects of psychological dispositions is still in its infancy. The effects reported in the studies supporting that Openness moderates political communication are modest (Gerber et al., 2013; Hirsh et al., 2012). In order to prevent a publication bias to develop, it will be necessary to acknowledge the null-findings (Gerber, Malhotra, Dowling, & Doherty, 2010; Gerber & Malhotra, 2008).

The unexpected findings reported in the framing experiment (study 1) might provide an opportunity for further research. In the framing-experiment, the association between Openness and punitive attitudes reported in the baseline condition was suppressed when additional information about the advantages of suspended sentences was provided. The results of the framing-experiment suggest that information might be a factor that suppresses the association between Openness and punitive attitudes. Lane (1955, p. 174) already theorized that personality traits are related to political attitudes till the extent that this association is not constrained by other more immediate factors affecting political attitudes. Further research could theorize and test to what extent persuasive appeals might crowd-out the association between the FFM and political attitudes.

To summarize, my results suggest that the FFM trait Openness does not condition the effectiveness of persuasive appeals when it comes to social attitudes. My findings suggest that scholars interested in studying the persuasion of social attitudes, should reconsider if controlling for FFM traits such as Openness to Experience would be meaningful. Yet, this conclusion might be too preliminary based upon current the empirical evidence. Most importantly, further research is

needed to theorize and test if and to what extent the FFM traits moderate the effects of political persuasion.

## 5. Navigating the Numbers: How the Anchoring Heuristic, Ideology, Knowledge and Openness to Experience Shape Factual Beliefs<sup>45</sup>

### Abstract

Elites communicate numbers and thereby set anchors for citizens to arrive at their factual beliefs. The anchoring heuristic explains that people rely upon anchors to arrive at factual beliefs. I argue that political ideology, political knowledge and Openness moderate the reliance upon anchors. In a survey experiment, participants received a low or a high anchor and were asked to express the number of non-Western immigrants currently living in their country. Participants relied upon the anchor to arrive at their factual beliefs. However, receiving a high anchor political ideology, but not political knowledge nor personality, moderated the reliance upon anchors. Specifically, participants with conservative social attitudes accept the high anchor, whereas participants with liberal social attitudes adjust away from the anchor towards lower numbers. Receiving a low anchor, participants adjust away from the anchor without relying upon their prior attitudes or political knowledge. This study concludes that the anchoring heuristic shapes factual beliefs and that political ideology moderates the anchoring effect in some but not all situations.

**Keywords.** Factual Beliefs, Anchoring Heuristic, Ideology, Knowledge, Personality

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## 5.1. Introduction

Factual numbers are among the essential nuts and bolts of policy debate. When the news media and politicians discuss societal problems, such as mass immigration, they almost always emphasize factual quantities to support their arguments. For instance, opponents of immigration reform in the US argue that it results in an inflow of “8.7 million” people (Sessions, 2007), whereas proponents of the immigration reform argue that it “resolves the status of the estimated 12 million people who are here illegally” (Bush 2007). Likewise, the leader of the British Labour party, Edward Miliband (2012), criticized the government for not solving the immigration issue as “in 2011 589,000 immigrants arrived.”

Yet, how do citizens navigate these numbers and arrive at their factual beliefs? Extant research has documented that most citizens lack policy specific knowledge (Gilens, 2001; Kuklinski, Quirk, Schwieder, & Rich, 1998). Given this lack of knowledge, it is not surprising that citizens tend to disproportionately rely upon cues available in their environment to arrive at their factual beliefs (Nadeau & Niemi, 1995; Nadeau et al., 1993; Wong, 2007). The psychological research on the anchoring heuristic explains that numbers serve as anchors, and citizens use these anchors to arrive at their factual beliefs (Tversky & Kahneman, 1974). Upon receiving an anchor, citizens test if the number is correct and, if necessary, adjust their estimate until a satisfactory factual belief is achieved. So by providing numbers, elites set anchors for citizens to arrive at their factual beliefs.

Citizens are not blank receivers of anchors provided by elites and there is a “considerable individual variability” in the tendency to rely upon anchors to arrive at factual beliefs (Furnham et al., 2012, p. 89). Surprisingly, a limited number of studies have addressed whether individual differences could explain why some people rely more upon anchors, whereas others rely less upon anchors to arrive at their factual beliefs (see for a review, Furnham & Boo, 2011). In this study, I

will theorize that political ideology, political knowledge, and the Five Factor Model personality trait Openness to Experience moderate the tendency to rely upon anchors in order to arrive at factual beliefs.

Research on the anchoring heuristic has so far neglected the idea that political ideology could moderate the reliance upon anchors. However, new information is often aligned with political ideology and partisan affinities (Bartels, 2002; Berinsky, 2007; Sniderman & Theriault, 2004). Accordingly, I expect that anchors which align with ideology are accepted, whereas anchors that do not align with ideology are rejected. Secondly, political knowledgeable citizens are expected to rely less upon anchors to arrive at factual beliefs (Chapman & Johnson, 1994; T. D. Wilson, Houston, Etling, & Brekke, 1996). Lastly, participants Openness to Experience, who are curious and open-minded (McCrae & Sutin, 2009), tend to be more responsive towards information in the political world (Gerber et al., 2013; Hibbing et al., 2011; McElroy & Dowd, 2007). Therefore I expect that people high on Openness rely more upon cues compared to participants low on Openness.

I test my expectations in a survey-experiment conducted in Denmark. Following the experimental procedure introduced by Tversky and Kahneman (1974), participants randomly received a high anchor or a low anchor. Upon receiving this anchor, participants were asked to report their factual belief about the number of non-Western immigrants currently living in Denmark, a country where immigration has been a salient issue since the 1990s (Bille, 2007; Green-Pedersen & Krogstrup, 2008). The results demonstrate the anchoring effect (Tversky & Kahneman, 1974) as factual beliefs about the number of non-Western immigrants living in Denmark were high when participants had received a high anchor whereas factual beliefs of participants were considerably lower when they received a low anchor. However, not all



participants rely upon the anchor to the same extent. I expand the understanding of the anchoring heuristic by showing that differences in political ideology, but not political knowledge nor personality, explain variation in the expressed factual beliefs about the number of non-Western immigrants. Specifically, upon receiving a high anchor, people align their factual beliefs with political attitudes. Participants with conservative social attitudes accept an anchor containing a high number, whereas participants with liberal social attitudes reject an anchor containing a high number and adjust towards lower factual beliefs. However, upon receiving a low anchor political attitudes do not moderate the reliance upon the anchor. Implications of these findings for the understanding of the anchoring heuristic and the formation of factual beliefs will be discussed.

## **5.2. Anchoring Heuristic and Factual Beliefs**

Research on the anchoring heuristic explains that in situations of judgmental uncertainty people anchor themselves on information which comes to mind or is provided by other people. Tversky and Kahneman (1974) illustrated this by asking participants to estimate the percentage of African countries with membership of the United Nations. Before expressing their factual beliefs, participants were shown a wheel of fortune which randomly stopped at a number between zero and hundred. If the wheel of fortune stopped at a high number, participants estimated a higher percentage of African countries with membership of the United Nations compared to the participants for whom the wheel stopped at a low number. In doing so, Tversky and Kahneman (1974) illustrated the anchoring effect whereby factual beliefs are biased towards the initial presented value.

The ubiquitousness of the anchoring effect has been shown across a large number of studies whereby citizens rely upon anchors to arrive at their factual beliefs (Furnham & Boo, 2011; Klein et

al., 2014). The working of the anchoring heuristic is understood as a process of confirmatory hypothesis testing (Furnham & Boo, 2011; Wegener, Petty, Blankenship, & Detweiler-Bedell, 2010). People test the hypothesis that the anchor represents the correct value. If this hypothesis is rejected, participants adjust away from the anchor until they arrive at a satisfactory value. Based upon the anchoring heuristic, I expect that numbers provided by elites serve as anchors to arrive at factual beliefs.

*H1. Numbers serve as anchors to arrive at factual beliefs. Receiving a high anchor leads to high factual beliefs, whereas receiving a low anchor leads to low factual beliefs.*

### **5.3. Political Ideology and Factual Beliefs**

People do not treat facts about the political world even-handedly; they are biased (Shapiro & Bloch-Elkon, 2008). Especially, people's political ideology influences their factual beliefs (Bartels, 2002; Berinsky, 2007; Lavine et al., 2012). For example, during the Reagan presidency the economy improved, but Democrats thought that the economy was worsening (Bartels, 2002). Similarly, Berinsky (2007, pp. 980–981) reports that Democrats overestimate the number of casualties in the Iraq war, whereas Republicans underestimate the casualties.

But why do people rely upon their political predispositions when confronted with new facts in the political world? Festinger's (1957) research on attitude consistency suggests that exposure to information which conflicts with held beliefs creates cognitive dissonance. In order to reduce dissonance, people re-interpret information in line with their prior political attitudes. The related motivated reasoning framework explains that people's evaluations of the political world are modified by directional goals which motivated people to align new ideas and beliefs with their

priors (Lodge & Taber, 2002; Taber & Lodge, 2006). The disconfirmation bias suggests people put in more effort to generate counter-arguments when information is incongruent with existing attitudes, while they have a tendency to accept information congruent with existing attitudes (Taber & Lodge, 2006). Research on cognitive dissonance and motivated reasoning suggests that ideology is an important individual difference moderating the anchoring effect as people align new factual information in line with their prior political attitudes.

In this study, I address the extent to which citizens rely upon anchors to arrive at factual beliefs about the number of non-Western immigrants. I expect that anchors about the number of immigrants will be moderated by the social attitudes dimension of political ideology. Social conservatives have negative attitudes towards immigrants as they have a preference for a social hierarchy and intolerance for those who deviate from the norms in society (Flanagan & Lee, 2003; Stubager, 2010a). I expect that people with social conservative attitudes see anchors containing large numbers as a confirmation of their negative attitudes towards immigrants and therefore accept the anchor. Similarly, anchors consisting of small numbers will be rejected by social conservatives as they do not match with their political attitudes. Consequently, social conservatives will reject the anchor and come to higher estimates than the value of the anchor. I expect the opposite pattern among social liberals. Social liberals are tolerant, dislike social hierarchy and have positive attitudes towards immigrants. People with liberal social attitudes accept anchors consisting of small numbers as small numbers confirm prior political attitudes. Anchors consisting of high numbers will be rejected as high numbers are not in line with prior political attitudes of social liberals and lead to lower estimates than the anchor value. These expectations are formulated in hypothesis 2:

**H2.** *Social conservatives will accept a high anchor but will not rely upon a low anchor and instead adjust upwards to higher factual beliefs. Social liberals will accept a low anchor but will not rely upon a high anchor and instead adjust downwards to lower factual beliefs.*

#### **5.4. Political Knowledge and Factual Beliefs**

Research on the anchoring heuristic has addressed to what extent political knowledge moderates the anchoring effect. Initial studies suggested that more knowledgeable citizens rely less upon anchors (Chapman & Johnson, 1994; T. D. Wilson et al., 1996). However, even citizens with high levels domain-specific knowledge such as car salesmen, real estate agents and legal professionals relied upon anchors to arrive at their factual beliefs in their field of expertise (e.g., the price of cars and houses or the length of sentences). However, people with domain specific knowledge relied less upon the anchors to arrive at their factual beliefs compared to participants with low levels of domain specific knowledge (Englich, Mussweiler, & Strack, 2006; Northcraft & Neale, 1987). This comports with evidence in political science that citizens with high levels of political knowledge rely less upon information in the political world (Kam, 2005). To summarize, political knowledge is expected to moderate the anchoring effect, whereby the more knowledgeable participants rely less upon anchors to arrive at factual beliefs compared to less knowledgeable participants. I have expressed this in hypothesis 3.

**H3.** *Participants with low levels of political knowledge base their factual belief upon the anchor. Participants with higher levels of political knowledge rely less upon the anchors.*

## 5.5. Openness to Experience and Factual Beliefs

Recent political science research addressed the relationship between FFM personality traits and political attitudes and behaviours (Gerber et al., 2011a; Mondak & Halperin, 2008). In this study, specific attention is given to the FFM trait Openness to Experience. Openness is a hierarchical trait which encapsulates the tendency to have imaginative, curious and exploratory tendencies (McCrae & Sutin, 2009; McCrae, 1996). Citizens open to experience collect more information about politics (Gerber et al., 2011b). Moreover, high scorers on Openness seem to be more responsive to persuasive appeals. For instance, Gerber et al. (2013) reported that citizens open to experience were more likely to respond to get out and vote messages. Hibbing et al. (2011) showed that the opinions of persons open to experience were more likely to be affected by political discussions. Likewise, McElory and Dowd (2007) demonstrated in two experiments that participants open to experiences relied more upon anchors to arrive at their factual beliefs compared to participants low on Openness (but see, Furnham et al., 2012).<sup>46</sup> These studies suggest that Openness will moderate the tendency to rely upon anchors to arrive at factual beliefs as formulated in hypothesis 4.

**H4.** *People open to experience will rely upon the anchor to arrive at their factual belief, whereas participants closed to experience will rely less upon the anchor.*

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<sup>46</sup> Furnham et al. (2012) reports in one of his two experiments that introverts are more likely to rely upon anchors to arrive at their factual beliefs compared to extroverts. In Supplementary Material Chapter 5.D, I fail to confirm that Extraversion, or any of the other FFM traits moderates the anchoring heuristic.

## 5.6. Methods

The anchoring experiment was included in a study of political attitudes among young Danish adults. The Danish National Board of Health provided a dataset with 10,416 individuals who appeared in front of the Danish draft board since 2006.<sup>47</sup> Missing contact information resulted in the exclusion of 1,216 individuals. Using the remaining 9,200 individuals, a random sample of 2,000 men and 2,000 women was drawn. *SFI-survey* sent an invitation letter to the selected 4,000 individuals to participate in the online survey in the period from March 2 through April 10, 2012. In total, 1,186 people responded which equals a response rate of 29.65%. A lottery determined which participant received an iPhone in return for participation.

The anchoring experiment was included in the survey, and participants randomly received a low or high anchor followed by the question about the exact number of non-Western immigrants living in Denmark. The low anchor was set at 50,000 and the high anchor at 500,000.<sup>48</sup> In the experiment, participants were first asked “Do you think that there are currently more or fewer than [50,000 / 500,000] non-Western immigrants living in in Denmark?” Afterwards, participants received the following instruction: “Please write down the exact number of non-Western immigrants currently living in Denmark.” Participants were provided with an open space in which they could type the number of immigrants. In order to reduce the demand characteristics (Nadeau & Niemi, 1995), participants could tick a separate “don’t know” option.

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<sup>47</sup> The dataset consisted of 4,400 randomly selected men from the registry and all 6,016 women in the registry.

<sup>48</sup> Non-Western immigrants are individuals coming from all other countries than the EU member states, Iceland, Norway, Andorra, Liechtenstein, Monaco, San Marino, Switzerland, the Vatican State, Canada, USA, Australia, and New Zealand (OECD, 2010). Note that in the spring of 2012, a total of 381,905 non-Western immigrants lived in Denmark (Statistics Denmark, 2013). The actual number is somewhat closer to the high anchor compared to the low anchor.

Political ideology was operationalized using an social attitudes dimension which encapsulates attitudes towards moral issues, crime and punishment, and the environment (Feldman & Johnston, 2013; Stubager, 2010a; Treier & Hillygus, 2009). Participants answered six items such as “Violent crimes should be punished much harder” on a scale ranging from “totally agree” (1) through “totally disagree” (4) with a separate “don’t know” option (see Supplementary Material Chapter 5.A, Table 5.A.2 for item wording and factor loadings, and Figure 5.A.1 for a Kernel density plot). I recoded the scale to range from the most conservative (or right-wing; 0) to the most liberal (or left-wing; 1) social attitudes ( $\alpha = 0.70$ ;  $M = 0.50$ ;  $SD = 0.19$ ).

A 12-item battery measured political knowledge asking items such as “Who is the Danish Prime Minister?” (Supplementary Material Chapter 5.A, Table 5.A.3 provides the item wording and Figure 5.A.2 for a Kernel density plot). The recoded scale ranges from the lowest (0) to the highest (1) observed level of political knowledge ( $\alpha = 0.65$ ;  $M = 0.60$ ;  $SD = 0.22$ ).

Lastly, Openness was measured using a 12 items which was part of the NEO PI-R Short Version (Skovdahl-Hansen et al., 2004). Participants were asked to rate their agreement with items such as “I have a lively fantasy” that were scored on a scale ranging from “totally agree” (1) through “totally disagree.” I created an Openness scale that ranged from the lowest (0) to the highest (1) observed level of Openness ( $\alpha = 0.71$ ;  $M = 0.48$ ;  $SD = 0.18$ ) (see Supplementary Material Chapter 5.A Table 5.A.4 for item wording and factor loadings and Figure 5.A.3 for a Kernel density plot).

## 5.7. Results

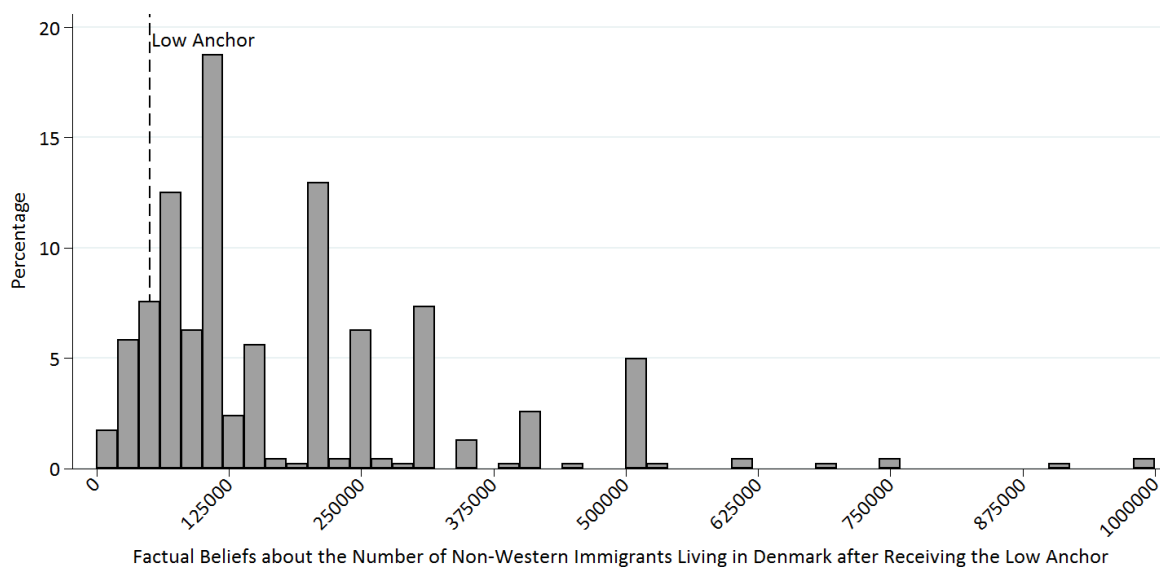
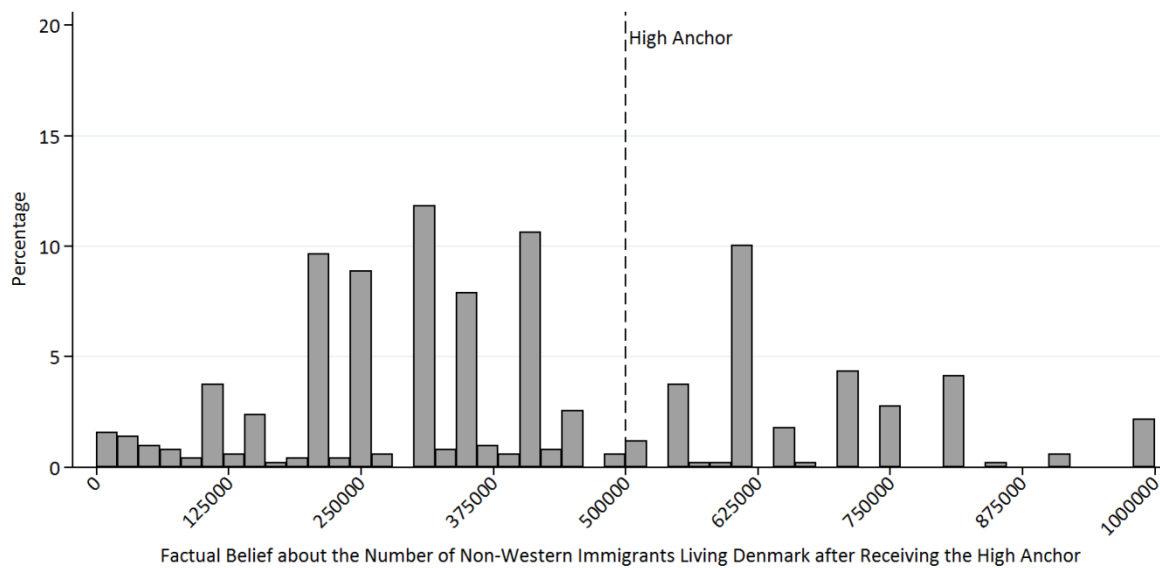
Based upon the anchoring heuristic, I expect numbers to serve as anchors leading participants receiving a high anchor to express higher factual beliefs compared to participants that received a low anchor.<sup>49</sup> Figure 5.1 provides plots of the distribution of estimated number of non-Western immigrants in the high and low anchor condition. The upper panel projects the participants in the high anchor condition who on average estimated that 432,255 ( $SD = 345,790$ ) non-Western immigrants lived in Denmark. In the lower panel, the distribution of the factual beliefs in the low anchor condition is provided. In this condition, participants estimated that on average 191,636 ( $SD = 259,721$ ) non-Western immigrants lived in Denmark. Comparisons of the estimated number of non-Western immigrants in the low and high anchor condition support hypothesis 1 as participants in the high anchor condition provided a higher estimate of the number of non-Western immigrants compared to participants in the low anchor condition ( $t(1,022) = -12.53, p < 0.00$ ).

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<sup>49</sup> Two outliers were excluded as the estimates of the number of non-Western immigrants were above the actual population of Denmark (i.e. 5,543,453). Conclusions do not change if the two observations are included as shown in the analyses in Supplementary Material Chapter 5.B.



**Figure 5.1** Factual Beliefs about the Number of non-Western Immigrants Living in Denmark Receiving the high (upper panel) or low (lower panel) anchor



*Note.* The estimates are trimmed for graphical reasons between 0 and 1,000,000. Five observations higher than 1,000,000 were excluded from the graphical display in the upper panel of Figure 5.1, whereas 7 observations were excluded from the lower panel.

The anchoring index is an expression of the ratio of the differences between the high and the low anchor expressed as a percentage (Kahneman, 2011, chapter 11). I calculate the anchoring index by dividing the difference between the mean estimate in the high anchor condition and the low anchor condition by the difference between the high anchor and the low anchor. The anchoring index is 0 if all participants adjust away from the anchor and arrive at their factual beliefs irrespective of the anchor, whereas the anchoring index is 100 if all participants adopt the anchor value as their final estimate. Following formula 1, the anchoring index in this study is 53%, which suggests that some but not all participants use the anchor to arrive at their factual beliefs. This echoes the observation by Furnham et al. (2012, p. 89) that there is considerable variance in the tendency to rely upon anchors to arrive at factual beliefs.<sup>50</sup>

$$\frac{(\text{Estimate in High Anchor} - \text{Estimate in Low Anchor})}{(\text{High Anchor} - \text{Low Anchor})} = \left( \frac{(432,255 - 191,636)}{500,000 - 50,000} \right) \times 100 = 53\% \quad (1)$$

I turn to OLS regression models in order to test the hypotheses that ideology, political knowledge and Openness moderate the anchoring heuristic, while controlling for age and gender.<sup>51</sup> The first column of Table 5.1 demonstrates that political attitudes moderate the reliance upon the anchor (H2) as the interaction between the anchor and the social attitudes dimension is statistically significant ( $b = -199,942, p < 0.05$ ). However, in order to interpret the interaction I turn to a plot of the predicted values (Kam & Franzese, 2007). I expected social conservatives to rely upon the high anchor and adjust away from the low anchor, whereas participants with liberal social attitudes

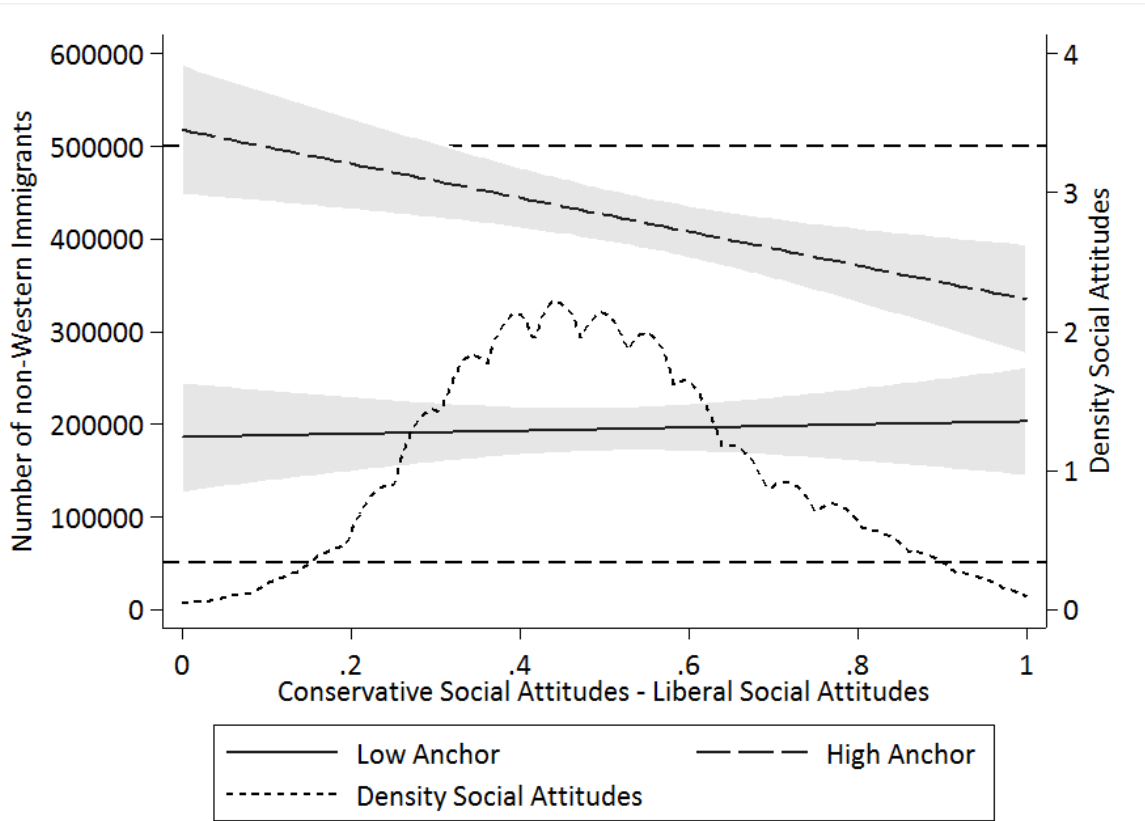
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<sup>50</sup> The conclusion that the anchor conditions the expressed factual beliefs does not change when I control for age and gender in an OLS regression model. Results are available upon request.

<sup>51</sup> The dependent variable is the quantitative estimate of the number of non-Western immigrants. Negative binomial regressions lead to substantively similar conclusions (see Supplementary Material Chapter 5.C).

were expected to rely upon the low anchor and adjust away from the high anchor. Figure 5.2 projects the predicted values of the number of non-Western immigrants in the high and low anchor condition at the different values of the social attitudes dimension keeping the other covariates at their central tendencies. As can be seen, the social attitudes dimension shapes the interpretation of the anchor in the high anchor condition but not in the low anchor condition. Participants with more conservative social attitudes report estimates which circle around the value of the high anchor. In line with the expectations, the estimated number of non-Western immigrants decreases when moving towards liberal social attitudes. The results confirm that participants with liberal social attitudes reject the anchor and come to estimates which are lower than the provided anchor. Yet, contrary to my expectations, the predicted values in the low anchor condition circle around the same value at different levels of the social attitudes dimension. This signals that social attitudes do not moderate the estimates of the number of non-Western immigrants. I will discuss the implications of this finding in the discussion.

**Figure 5.2** Predicted Estimates of the Number of non-Western Immigrants in the Low and High Anchor Condition Conditional upon the Social Attitudes Dimension (Model 1)



*Note:* Predicted values in the two anchor conditions. Dashed horizontal lines are the references lines of the anchors

I expected political knowledgeable participants to rely less upon the anchors compared to participants with lower levels of political knowledge (H3). The interaction effect is, however, not significant and inspection of the predicted values of the number of non-Western immigrants in the high and low anchor over the range of political knowledge confirms that I should reject my hypothesis (Table 5.1, model 2).<sup>52</sup> Turning to hypothesis 4, I do not confirm that Openness moderates the tendency to rely upon the anchors to arrive at factual beliefs (Table 5.1, model 3).<sup>53</sup>

<sup>52</sup> Plot of the predicted values available upon request.

<sup>53</sup> Plot of the predicted values available upon request.

In the fourth model (Table 5.1), I test the hypotheses that ideology, political knowledge and personality moderate the reliance upon the anchor simultaneously. Following Brambor et al (2006, pp. 66–71), model 4 includes all consecutive interaction terms. This full model does not change the conclusions derived upon model 1-3. Specifically, political knowledge and Openness still do not moderate the tendency to rely upon the anchors to arrive at factual beliefs. However, political attitudes moderate the tendency to rely upon anchors to arrive at factual beliefs. In Figure 5.3, I demonstrate that findings for political ideology are robust controlling for the other moderators and the interaction between the moderators.

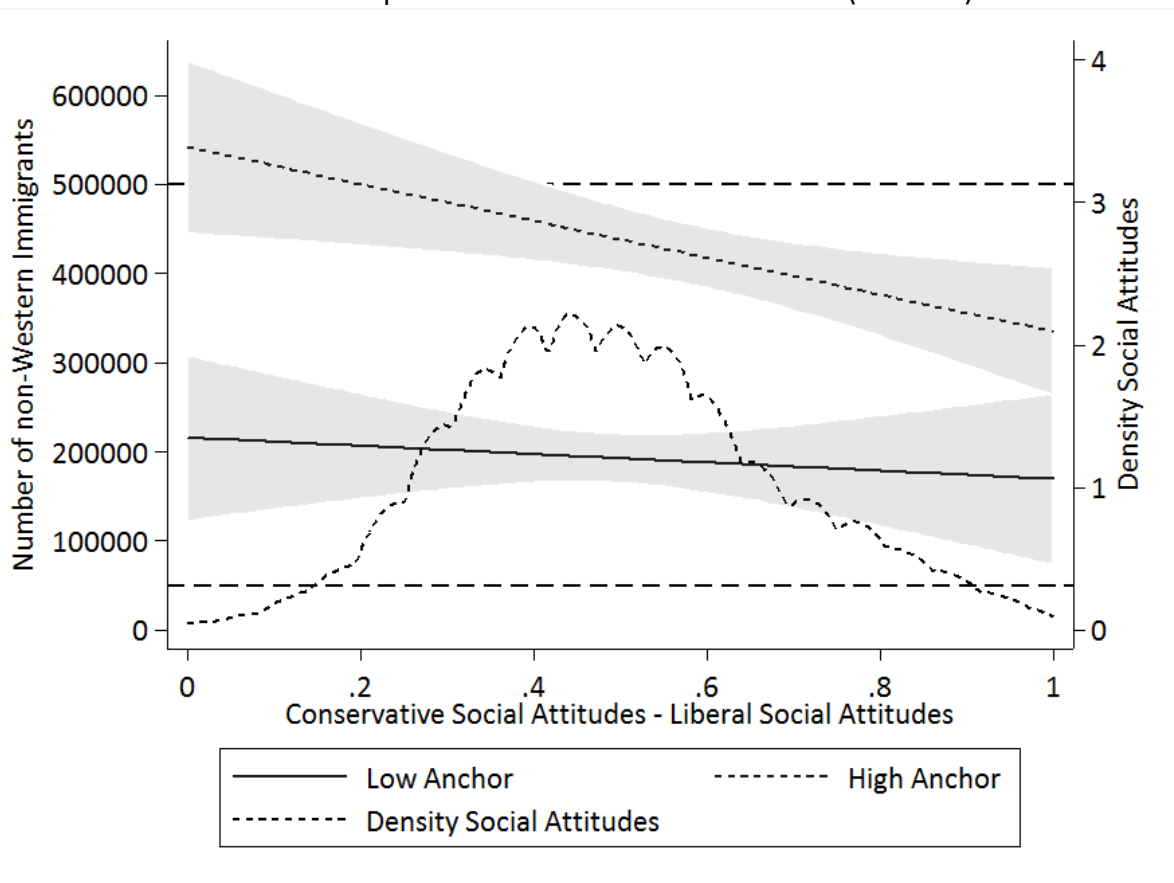
**Table 5.1** OLS Regression Models testing to what extent the Anchoring Heuristic, Social Attitudes, Political Knowledge, and Personality Predict Factual Beliefs about non-Western Immigrants

	1	2	3	4
Anchor (Ref. = Low Anchor)	331,971*	271,957*	295,795*	697,915
	(47,499)	(60,468)	(47,869)	(430,162)
Female	-63,355*	-61,491*	-63,252*	-57,289*
	(19,587)	(20,830)	(18,908)	(20,632)
Age	-5,944	-5,453	-5,950	-5,426
	(4,432)	(4,453)	(4,397)	(4,487)
Social Attitudes	16,839	-	-	2,978
	(55,256)			(558,385)
Anchor X Social Attitudes	-199,942*	-	-	-62,291
	(81,513)			(796,115)
Political Knowledge	-	12,397	-	389,635
		(52,040)		(504,827)
Anchor X Political Knowledge	-	-66,121	-	-814,944
		(93,312)		(631,506)
Openness to Experience	-	-	117,505	669,970
			(78,413)	(1,131,350)
Anchor X Openness to Experience	-	-	-134,267	-1,194,485
			(105,894)	(1,226,813)
Social Attitudes X Political Knowledge	-	-	-	-175,773
				(770,564)
Social Attitudes X Openness to Experience	-	-	-	-260,634
				(1,619,025)
Political Knowledge X Openness to Experience	-	-	-	-961,777
				(1,480,584)
Anchor X Social Attitudes X Political Knowledge	-	-	-	281,712
				(1,116,506)
Anchor X Social Attitudes X Openness to Experience	-	-	-	598,849
				(1,898,286)
Anchor X Political Knowledge X Openness to Experience	-	-	-	2,341,528
				(1,734,090)
Social Attitudes X Political Knowledge X Openness to Experience	-	-	-	612,514
				(2,136,714)
Anchor X Social Attitudes X Political X Openness to Experience	-	-	-	-1,864,436
				(2,597,201)
Constant	353,833*	341,818*	305,290*	96,220
	(111,525)	(121,848)	(108,060)	(366,629)
N	960	984	983	959
R <sup>2</sup>	0.14	0.14	0.14	0.15

Entries are unstandardized OLS regression coefficients with Huber-White robust standard errors in the parentheses. The regression coefficients are presented without decimals.

\*  $p < 0.05$ .

**Figure 5.3** Predicted Estimates of the Number of non-Western Immigrants in the Low and High Anchor Condition Conditional upon the Social Attitudes Dimension (Model 4)



*Note:* Predicted values in the two anchor conditions. Dashed horizontal lines are the reference lines of the anchors

## 5.8. Discussion

Citizens use numbers as anchors to navigate through the political world. When citizens receive a high anchor they tend to arrive at higher factual beliefs compared to the situation where they receive a low anchor. Citizens are, however, not blank receivers of numbers in the political world. I expected political ideology to moderate the reliance upon the anchor. In line with my expectation, social conservatives accept a high anchor, whereas social liberals adjust towards lower numbers. I observe a different pattern when participants were provided with a low anchor. In this condition most participants adjust away from the anchor, but the adjustment is not conditioned by

differences in political ideology. I turn to the theoretical advancements in research on motivated reasoning in order to interpret these somewhat unexpected findings.

The degree of ambiguity of the anchor might explain why I observe the expected effects of ideology among the high anchor but not among the low anchor. Specifically, Lodge and Taber (2002) suggested that individuals rely more upon prior political attitudes when tasks are ambiguous. In a similar manner, Doherty and Wolak (2012, 318) report that “prior attitudes are inevitably a useful guide for navigating political environments”, however, “people use their priors only when they serve as a useful tool to decipher ambiguous situations” (see also Druckman, Peterson, & Slothuus, 2013, p. 318). In this study, the value of the high anchor was set at 500,000 which is a realistic number given the actual population of immigrants in Denmark (e.g., 381,905). Participants with social conservative attitudes accept the anchor. Logically, the value of 500,000 creates resistance among participants with liberal social attitudes, which makes participants turn towards their prior political attitudes in order to determine whether to rely upon the anchor or adjust away. Social conservatives will not experience this resistance in the high anchor condition and accept the anchor. Turning to the low anchor, a different pattern is observed. The value of the low anchor was set at the unrealistically low value of 50,000 which is obviously incorrect and therefore unambiguous. In the experiment most if not all participants rejected the initial hypothesis that the anchor is representing the actual value. Following the almost unanimous rejection of the anchor, participants do not experience any feeling of ambiguity or need to reduce dissonance. Instead, and following the anchoring heuristic, participants adjust upwards towards acceptable values and do not turn to their prior attitudes.

Contrary to some earlier research (Furnham & Boo, 2011), I did not find any evidence that political knowledge moderates the anchoring heuristic. Likewise, I did not find any evidence that



the FFM trait Openness moderates the tendency to rely upon anchors. These results suggest that political knowledge and the FFM trait Openness might not be the moderators of the anchoring heuristic. However, the conclusions are drawn upon one experiment, assessing one issue in one country. Consequently, more research will have to confirm this pattern of null-findings.

My results speak to the research on the anchoring heuristic demonstrating that political ideology is an important individual difference moderating the powerful and ubiquitous anchoring heuristic. Moreover, this study speaks to the research on mass-elite communication and demonstrates that political knowledgeable people also rely upon cues in the environment to arrive at factual beliefs. The results of this study also demonstrate that there are limits to which the FFM trait Openness affects political behaviour (Mondak & Halperin, 2008) as I fail to find any suggestion that Openness is a moderator of the tendency to rely upon anchors. Lastly, the results of this study speak to research on mass-elite communication suggesting that citizens use their prior political attitudes to shape the interpretation of political information (Nelson & Garst, 2005; Sniderman & Theriault, 2004) under some but not all conditions (David Doherty & Wolak, 2012; Druckman et al., 2013; Lavine et al., 2012). Consequently, this study may spark new research addressing when and under what conditions the effects of political communication are moderated by individual differences.

## 6. Conclusions and implications

This dissertation set out to answer the question *to what extent are the FFM traits and facets directly and indirectly associated with political attitudes?* In the following, I discuss the overarching conclusion of this dissertation in detail and outline the implications for the research addressing the relationship between the FFM and political attitudes and present opportunities for further research.

### 6.1. What have we learned?

Consistent with my argument, I have demonstrated that there is a fine-grained and direct association between the FFM and political attitudes but this association can be constrained by other, more immediate, factors such as material self-interest. In contrast, I did not find support for my expectation that the effects of political communication on political attitudes are moderated by the FFM traits.

Starting with the fine-grained associations between the FFM traits and facets with social and economic attitudes, I have documented three patterns of associations. First, all facets of Conscientiousness were related to the attitude dimensions. Alternatively, the association between political attitudes and the FFM traits are driven by specific facets as is the case for Agreeableness and Extraversion. Thirdly, for Openness and Neuroticism the attitude dimension conditions whether the association should be interpreted at the trait level or whether specific facets drive the association. I will discuss the implications of these patterns.

The facets of Conscientiousness are consistently related to social and economic attitudes.

Consequently, emphasizing one facet to interpret the association between the trait

Conscientiousness and conservatism provides an incomplete insight in the relationship between

Conscientiousness and political attitudes. Instead, conservatives generally prefer structure, strive for achievement, and are self-disciplined and dutiful.

The patterns documented for Agreeableness and Extraversion demonstrate that specific facets instead of the broad traits are associated with political attitudes. For instance, the Agreeableness facet Trust is strongly connected to social liberalism, whereas this facet is negatively or even unrelated to economic liberalism. Likewise, the Extraversion facet Assertiveness seems to drive the relationship with political attitudes. This suggests that scholars should theorize and assess specific facets instead of the broad traits.

The relationship between political attitudes and the facets of Openness and Neuroticism differs across attitude dimensions. All Openness facets are associated with social liberalism which implies that disproportionately stressing the facet Ideas to explain the relationship between Openness and social liberalism provides an incomplete insight into the connection between Openness and social liberalism. Social liberals are not only open to ideas but also more open to aesthetics, feelings, fantasy and actions. However, some but not all of the Openness facets are connected with economic liberalism. Accordingly, this association is better interpreted at the facet level, whereby liberal economic attitudes seem to resonate with the tendency to be more sensitive for aesthetics and feelings. Similarly, the tendency to emphasize the Anxiety facet to explain the relationship between Neuroticism and economic attitudes provides an incomplete picture as all facets of Neuroticism are connected to economic liberalism. Yet, the association between Neuroticism and social liberalism is better interpreted at the facet level. Social liberals seem to be self-conscious and vulnerable but not anxious. I thereby demonstrate that facets of Neuroticism provide more information about the association with social attitudes compared to the trait.

To summarize, Conscientiousness and all its facets are consistently associated with political attitudes. Likewise, the association between Agreeableness and Extraversion is better seen at the lower order facet level compared to the higher order traits. However, the association between political attitudes and the traits and facets of Openness and Neuroticism differ conditional upon the attitude dimension. In some cases the association is driven by all facets, whereas in other cases only some of the facets are associated with political attitudes.

These results are notable because, so far, bottom-up approaches in political science trying to explain variation in political attitudes have subsumed the facets into the higher order FFM traits and have primarily assessed the associations between these five broad traits and political attitudes (see for notable exceptions, Carney et al., 2008; Gerber et al., 2011a; Peterson & Palmer, 2013; Van Hiel & Mervielde, 2004). In this first section of the dissertation, I have showed that moving beyond the direct associations between the broad FFM traits and political ideology provides an insight in the fine-grained pattern of associations between the FFM and political attitudes. I thereby expand bottom-up approaches and point out that the associations between the FFM and political attitudes are more fine-grained than often assumed. Moreover, I fail to find support for the suggestion that psychological dispositions should be closer associated with the social attitude dimension compared to the economic attitude dimension. Instead I show a pattern whereby the traits are associated with political attitudes but for some traits this association is homogeneous across all facets, whereas for other traits it are some of the lower order facets that drive the relationship with the different political attitudes dimensions.

Having established that there is a fine-grained pattern of direct associations, I set out to probe deeper into under what conditions and in what ways the FFM can influence political attitudes. I do so because I observe that most studies using a bottom-up approach have predominantly

associated personality directly with political attitudes (see for exceptions, De Neve, 2013; Gerber, Huber, et al., 2010; Redlawsk & Tolbert, 2012). In line with the argument put forward by Robert Lane (1955, pp. 174–175), I theorize that the association between the FFM and political attitudes can be constrained by other factors. I have confirmed that the association between FFM traits and economic attitudes can be constrained by material self-interest in my comparative study of Denmark and the US (chapter 3). Among the lower income earners there is a preference for liberal economic policies independent of the personality traits, whereas higher income earners align their economic attitudes with Conscientiousness, Agreeableness and Neuroticism (US only). I thereby contribute and expand the existing theories (Caprara & Zimbardo, 2004; Duckitt & Sibley, 2010; Jost et al., 2009, p. 329) as the association between personality and political attitudes was predominantly studied independent of other characteristics of the individual. My conclusions also demonstrate the importance of moving beyond a one-dimensional operationalization of political orientation (see for overviews, Carney et al., 2008; Sibley et al., 2012) but instead take more specific attitude dimensions as the starting point of theoretically informed associations between personality and politics.

I have proposed a second pathway where effects of political communication on political attitudes are moderated by the FFM traits. Based upon the existing literature, I isolated two different functions of the FFM. First, research outside the FFM suggested that psychological dispositions could underlie a general persuasibility whereby the relative high or low scorers on a psychological dispositions are easier to persuade by political communication (Eagly, 1981; Gastil et al., 2008; McGuire, 1968). Alternatively, a small body of research theorized that persuasion occurs when the content of a persuasive message resonates with the motives rooted in the psychological disposition (Kam & Simas, 2010; Lavine & Snyder, 1996; Lavine et al., 1999, 2005). Yet, evidence

within the FFM framework was scarce but the FFM trait Openness stands out. Both aforementioned theoretical perspectives have been used to explain the role of this trait in political persuasion. First, a few studies suggested that Openness conditions the persuasibility of citizens whereby high scorers on Openness would be more persuadable (Gerber et al., 2013). Alternatively, other studies demonstrated that persuasion occurs when the content of the message resonates with the motives rooted in the FFM (Hirsh et al., 2012; Wheeler et al., 2005). In this dissertation, I have assessed both arguments.

In three experiments, conducted in three independent samples across two countries, I did not find any evidence that the FFM trait Openness to Experience moderates the effects of political communication on political attitudes. Specifically, I did not find evidence supporting the argument that persuasion occurs when the message resonates with the motives rooted in the trait (Hirsh et al., 2012), nor did I find evidence for a general persuasibility of Openness (Gerber et al., 2013). The non-findings suggest that the FFM traits might not always be conditioning political communication. Based upon the results in this dissertation, I cannot support either of the theoretical perspectives that have been put forward to integrate psychological dispositions, such as the FFM, in the understanding of political communication. These conclusions are obviously limited to design and context of the study, as I have only assessed the effects of political communication upon social attitudes (e.g., punitive attitudes, and immigration Johnston & Wronski, 2013) in two comparative contexts (e.g., Denmark and the Netherlands). I will discuss suggestions for further research later in the discussion.

To summarize, this dissertation demonstrates that there is pattern of fine-grained direct associations between the FFM and political attitude dimensions but this association can be constrained by other, more immediate, factors such as material self-interest. I did not find

support, however, for the expectation that the effects of political communication on political attitudes are moderated by the FFM traits. These results are important because by presenting novel findings this dissertation contributes to the bottom-up research associating personality with political attitudes. Previously the focus was predominantly upon broad FFM traits and one-dimensional measures of political ideology. I have demonstrated that the lower order facets and different attitudinal dimensions provide a lot of information about the association between personality and politics. Moreover, I have demonstrated that the FFM traits are associated with political attitudes but only to the extent that other factors do not constrain the association between personality and political attitudes. However, the importance of the FFM in political communication is uncertain and further research will have to address this association. To summarize this dissertation has contributed to the research agenda addressing the association between personality and political attitudes and the conclusions reached in this dissertation pave the way for interesting new questions. In the next paragraph, I will discuss opportunities for further research.

## **6.2. Limitations and Implications for Further Research**

Given that the dissertation set out to explore the understudied impact of FFM on political attitudes, the conclusions drawn in this dissertation naturally call for further research. Moreover, like in any study, this dissertation has some limitations by themselves that call for further research. Here, I have outlined six avenues for further research that both address some of the limitations and build upon some of the conclusions drawn in this dissertation. Specifically, (1) I discuss the sometimes assumed causal pathway between genes, personality and political attitudes, (2) I discuss the measurement of personality, (3) I discuss the opportunities for more

research using the lower order facets, (4) I outline opportunities for comparative research, (5) I discuss possibilities to study factors that constrain the association between personality and economic attitudes, and (6) I speculate about the role of the FFM in political communication.

Stressing the importance of personality in the formation of political attitudes, some scholars argue that FFM mediates the associations between genes and political attitudes (Gerber, Huber, et al., 2010, p. 113; Gerber et al., 2011a, pp. 266–267; Jost, 2006; Mondak, 2010, p. 127). Indeed, twin studies demonstrate that political attitudes have a heritable component (Alford et al., 2005; Eaves & Eysenck, 1974; Martin et al., 1986).<sup>54</sup> Moreover, Kandler, Bleidorn and Riemann (2012) confirm that the FFM, at least partly, mediates the association between genes and political attitudes. The status of this literature is, however, murky as at least three alternative patterns have been put forward. Firstly, Funk et al. (2013) concluded that the genetic component underlying political attitudes is largely distinct from the genetic component underlying the FFM (see also, Alford & Hibbing, 2007). Secondly, FFM traits and political attitudes might be shaped by a common genetic component, which implies that personality traits and political attitudes are correlated but that does not support the claim that FFM traits cause political attitudes (Verhulst, Eaves, et al., 2012; Verhulst et al., 2010). Thirdly, Verhulst et al. (2012) even present some preliminary evidence that political attitudes can actually cause FFM traits. These different patterns of associations suggest that it is currently too preliminary to draw conclusions about the association between genes, the FFM traits and political attitudes. At best more research is needed to disentangle this association.

Following the dominant tradition in personality psychology (see, Baumeister, Vohs, & Funder, 2007), the research employed in dissertation relied upon self-reported measures of the FFM that

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<sup>54</sup> See for an introduction Funk (2013)



were correlated with self-reported measures of political attitudes. There are two reasons not to limit research to self-reported measures. First, the question arises whether a full picture of an individuals' personality is derived when studies predominantly rely upon self-reported measures of personality (see also, Baumeister et al., 2007, p. 400). Second, the style, and sometimes the content, of items tapping into personality and political attitudes closely resemble each other. By operationalizing personality using behavioral measures we can provide a more complete picture of personality and empirically distinguish personality from attitudes. Personality psychology has developed measures to derive personality scores from the behavior by rating decorations of offices and bedrooms (Gosling, Ko, Mannarelli, & Morris, 2002), the organization of websites (Vazire & Gosling, 2004), content of emails (Gill, Oberlander, & Austin, 2006) and Facebook profiles (Ong et al., 2011). Applying some of these methods, Carney et al. (2008, study 2 and 3) demonstrated that liberals are more open to experiences as expressed in their conversational style and the way they decorate their offices and bedrooms compared to conservatives. Using behavioral measures of some facets, liberals are compared to conservatives more altruistic (Bechtel et al., 2013, p. 12; van Lange et al., 2012, p. 464) and open to ideas (Shook & Fazio, 2009, p. 996). These studies demonstrate that behavioral measures of personality are also associated with political attitudes. Yet, empirical evidence is sparse and further research could explore and expand how behavioral measures of the FFM are associated with specific attitude dimensions.

The fine-grained pattern of associations between the FFM facets and attitudes dimensions call for further research. A comparative research design conducted in comparable samples (Asendorpf et al., 2013), using an extensive personality batteries (such as the NEO PI-R) and comparable attitudinal dimensions will have to confirm whether the outlined pattern of associations between facets and political attitudes replicates across political contexts. A first step would be to replicate

the associations across western democracies. However, a possible next step would be to theorize and test whether the fine-grained associations differ across political context. For instance, Thorisdottir et al. (2007) documented that the association between Openness and political attitudes is different in eastern compared to western Europe.

Practical limitations, such as funding, might prevent scholars from designing large comparative studies. However, I think that comparative research could also be done using publicly available data-sources that now have included relatively short personality batteries in their surveys such as the longitudinal household panels conducted in Germany (GSOEP), the Netherlands (LISS panel), the United Kingdom (British Household Panel Study/Understanding Society), Switzerland (Swiss Household Panel) or the 2012 American National Election Survey.<sup>55</sup> Using these data sources, scholars could theorize and test whether the associations between the broad FFM traits and social and economic attitudes are similar across political contexts. I think this is an important question to address as I have reported that the FFM traits are associated with both social and economic attitudes (Gerber, Huber, et al., 2010; Gerber et al., 2011a; Sibley & Duckitt, 2008), whereas other studies have suggested that psychological dispositions, such as the FFM, are closer associated with social attitudes compared to economic attitudes (Carney et al., 2008; Crowson, 2009; Feldman & Johnston, 2013; Van Hiel & Mervielde, 2004).

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<sup>55</sup> The household panels, with the exception of the Dutch study, include brief measures of personality. In chapter 2 of the dissertation, I have showed that brief measures limit the interpretation of the associations as logically not all facets are included. Based upon the results in chapter 2 and 3, scholars should be careful interpreting the association at the trait level and especially with the Agreeableness and Extraversion as the associations might be over or underestimated due to specific facets which are represented in the brief measures of the facets. Nonetheless, comparative research is warranted (Feldman, 2013) and limitations of data availability might lead to the decision to include sub-optimal measures of personality.

In chapter 3, I have documented that the association between FFM traits and economic attitudes can be constrained by material self-interest. Theoretically, this argument could be further integrated with recent research addressing the correlates of economic attitudes. For instance, Rehm and colleagues (Rehm et al., 2012; 2009, 2010) theorized that unemployment rates within a persons' sector of employment as well as the specificity of someone's skills influence economic attitudes above and beyond material self-interest. Combining the argument developed in chapter 3 with the argument by Rehm and colleagues (Rehm et al., 2012; 2009, p. 872, 2010), I expect that the association between FFM and economic attitudes will be constrained when people work in sectors with relatively high levels of unemployment or when they have very specific skills (Rehm et al., 2012; Rehm, 2009, 2011). Using the aforementioned household panels, future research would be able to test these expectations.

A question that remains unanswered following this dissertation is whether the FFM moderates the effects of political communication. I report in this dissertation that FFM traits do not moderate political communication. Here, I discuss an alternative explanation how the FFM could influence the effects of political communication. In chapter 4 and 5, I have tested my argument using survey-experiments where citizens were randomly assigned to different treatments and all participants were forced to receive a persuasive message (see methods sections chapter 4 and 5). Gaines and Kuklinski (2011, p. 724) argued that this design "falls short when the treatment under study is prone to self-selection in the population and the researchers aims to draw meaningful inferences about this effect." Building upon the argument by Gaines and Kuklinski (2011), it is expected that political persuasion is especially likely to occur among people who choose to receive new information. However, I would add to this argument that persuasion is especially likely to occur among people who choose to receive new information *and* receive persuasive appeals that

resonates with the motives and needs rooted in a personality trait (see also chapter 4, Hirsh et al., 2012; Kam & Simas, 2010; Lavine & Snyder, 1996; Lavine et al., 1999). Gaines and Kuklinski (2011, p. 728) proposed a design for a survey-experiments that would allow to test this argument. Specifically, half of the participants are randomly assigned to the different treatment, like the survey-experiments conducted in this dissertation, however, the other half of the participants is allowed to self-select into the treatment or not. This procedure allows scholars to test whether the treatment effects are larger among those participants who self-select into the treatment compared to those participants who were forced to receive the treatment. Future research will have to test whether the effects of the FFM in political communication might be better understood using the here proposed model whereby self-selection into new information is the necessary first step for persuasion to occur.

To summarize, the studies conducted as part of this dissertation open up for new venues for further research that could further develop the direct associations between political attitudes and the FFM traits and facets as well as the moderating effects of personality traits on political communication.

### **6.3. Broader implications**

Attitudes, as argued in the introduction, are important in modern democracies as they influence vote choice and public policy. This dissertation set out to study variation in political attitudes. Traditionally, political attitudes were seen as the product of top-down processes; however, this dissertation expands a strand of research that has assessed the bottom-up approach to understanding of political attitudes. I have demonstrated that fundamental differences in personality are, at least in some situations, related to citizens' political attitudes and thereby

provide an insight in the variation across citizens' political attitudes. Knowing that personality traits are related to political attitudes might therefore help to understand the outcomes of modern democracies.

## 7. Summary (English)

In modern democracies, political attitudes, among other factors, influences vote choice and public policy. However, there is a great variation across citizens in their political attitudes. Where does this variation come from? Dwelling upon insights from personality psychology, a bottom-up approach argues that citizens gravitate towards political attitudes which resonate with the motives and needs rooted in their personality. Developing the bottom-up approach, recent studies employed the Five Factor Model (FFM) of personality, which consists of the five broad traits Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism and their lower order facets. Building upon this strand of research, I address the question: *to what extent are the FFM traits and facets directly and indirectly associated with political attitudes?*

In this dissertation, I report the result of four studies using five independent samples collected in three countries. First, I demonstrate there is a fine-grained pattern of direct associations between FFM personality traits, their lower order facets and the social and economic attitudes dimensions. For some traits (e.g., Conscientiousness, Openness, and Neuroticism) all facets are homogenously correlated with certain political attitudes, whereas for other traits (e.g., Agreeableness and Extraversion) some but not all facets are associated with the social and economic attitude dimensions. Turning to the moderated effects, I first demonstrate that the association of the FFM traits with political attitudes can be constrained by other, more immediate, factors such as material self-interest. Specifically, lower income earners tend to hold liberal (left-wing) economic attitudes independent of their personality traits, while higher income earners align their economic attitudes with their personality traits. Yet, I do not confirm that FFM personality traits moderate the effectiveness of political communication; instead, I find evidence that political ideology moderates political communication.

This dissertation thereby expands the bottom-up approaches arguing that political attitudes gravitate to the motives and needs rooted in the FFM traits. Firstly, I demonstrate that lower order facets and different attitudes dimensions provide a more detailed insight in the extent to which attitudes resonate with the broad traits or a specific facet of a FFM trait. I thereby demonstrate that the existing theories provide an incomplete picture of the association between the FFM and political attitudes by limiting the focus to the five broad FFM traits and broad ideology dimensions. Secondly, I theorized that more immediate factors such as material self-interest can constrain the association between economic attitudes and the FFM traits. Further research could theorize what other characteristics of the individuals as well as the political environment can constrain the association between the FFM and political attitudes. Thirdly, more research is needed in order to theorize and test if and to what extent personality FFM traits moderate the effects of political communication.

To conclude, this dissertation argues that there are fine-grained direct and indirect patterns of associations between FFM traits, the lower order facets and political attitudes. I thereby provide a step forward in this research agenda and have paved the way for exciting new research to further disentangle the association between personality and political attitudes.

## 8. Summary (Dansk)

I moderne demokratier har vælgernes politiske holdninger væsentlige implikationer for, hvilken politik politikerne gennemfører. Der er dog store forskelle mellem vælgernes holdninger til politiske spørgsmål. Hvordan kan vi forklare disse forskelle? Et svar på dette spørgsmål finder man i den psykologiske personlighedslitteratur, som argumenterer for, at vælgerne har holdninger, der er konsistente med deres personlige motiver og behov. En stor del af disse studier anvender femfaktor personlighedsmodellen (FFM), der indeholder fem brede personlighedstræk, *åbenhed*, *samvittighedsfuldhed*, *ekstraversion*, *venlighed* og *neuroticisme*, samt deres underliggende facetter. Med udgangspunkt i denne litteratur adresserer jeg i denne afhandling spørgsmålet: *I hvilket omfang er FFM-personlighedstrækkene og deres facetter direkte og indirekte relateret til politiske holdninger?*

Jeg rapporterer resultaterne fra fire studier, der anvender fem forskellige datakilder indsamlet i tre forskellige lande. Først demonstrerer jeg, at der er nuancerede direkte sammenhænge mellem personlighedstræk, deres underliggende facetter og sociale og økonomiske holdningsdimensioner. For nogle personlighedstræk (*samvittighedsfuldhed*, *åbenhed* og *neuroticisme*) er de underliggende facetter ensartet relateret til bestemte politiske holdninger, mens ikke alle de underliggende facetter ved andre personlighedstræk (*venlighed* og *ekstraversion*) har samme relation til sociale og økonomiske holdningsdimensioner. Det viser, at man bør inkludere de underliggende facetter i sine analyser og ikke bare de brede personlighedstræk. Ved at undersøge de indirekte relationer demonstrerer jeg, at andre mere øjeblikkelige faktorer, såsom materiel egeninteresse, kan begrænse eller hæmme sammenhængen mellem FFM-personlighedstræk og politiske holdninger. Mere specifikt har personer med en lav indkomst i højere grad venstreorienterede økonomiske holdninger uafhængigt af deres



personlighedstræk, mens der for personer med en højere indkomst er en klarere sammenhæng mellem deres holdninger og deres personlighedstræk. Ved at undersøge hvordan FFM-personlighedstræk påvirker effekten af politisk kommunikation, finder jeg, at betydningen af personlighedstræk er begrænset, hvorimod andre forhold, mere specifikt politisk ideologi, har større betydning.

Dermed udvider denne afhandling argumentet om, at politiske holdninger er konsistente med motiver og behov i vælgernes FFM-personlighedstræk. For det første demonstrerer jeg, at underliggende personlighedsfacetter og forskellige holdningsdimensioner giver en mere detaljeret viden om, i hvilket omfang holdninger er konsistente med brede personlighedstræk eller specifikke facetter af et FFM-træk. Dermed viser jeg, at eksisterende teorier giver et mangelfuldt billede af relationerne mellem FFM-personlighedstrækkene og politiske holdninger ved at afgrænse deres fokus til fem brede FFM-træk og brede ideologiske dimensioner. For det andet teoretiserer jeg, at mere øjeblikkelige faktorer kan begrænse sammenhængen mellem holdninger og motiver og behov med rod i personlighedstræk. Yderligere forskning vil kunne teoretisere, hvilke andre individuelle karakteristika samt forhold ved det politiske miljø, der kan begrænse relationen mellem FFM-personlighedstræk og politiske holdninger. For det tredje er der brug for mere forskning for at kunne teoretisere og undersøge, i hvilket omfang personlighedstræk har indflydelse på effekten af politisk kommunikation.

Denne afhandling argumenterer for, at der er nuancerede direkte og indirekte mønstre i sammenhængen mellem FFM-træk, deres underliggende facetter og politiske holdninger. Dermed udbygger jeg forskningen inden for sammenhængen mellem personlighed og politiske holdninger. Samtidig peger jeg på ny, spændende forskning i, hvordan vælgernes personlighed har implikationer for deres politiske holdninger.

## 9. Curriculum Vitae Bert N. Bakker

### Contact Information

Address: Willy Sluiterstraat 3  
1061 TJ, Amsterdam  
The Netherlands  
Date of birth: 27 September 1985, Hilversum (the Netherlands)  
Phone: +31 10 58 48 92  
Email: b.n.bakker@gmail.com  
Website: www.bertbakker.com

### Education

02/2011 – 01/2014 PhD Candidate at the Department of Political Science and Public Management, University of Southern Denmark, Odense (Denmark) with a research stay at the department of Political Science, VU University (the Netherlands) and coursework at the Inter-university Consortium for Political and Social Research (ICPSR) Summer Program 2011 and 2012 and the European Consortium for Political Research Summer School  
09/2009 – 08/2010 M.Sc. in Political Science (*with Distinction*), Department of Political Science, University of Amsterdam  
08/2008 – 10/2009 M.Sc. in Psychology (*obtained*), Department of Psychology, University of Amsterdam & graduate coursework at the Department of Political Science, University of California at Berkeley (USA)  
09/2004 – 08/2008 B.Sc. in Psychology (*obtained*), Department of Psychology, University of Amsterdam & coursework at the department of Psychology and department of Political Science at Otago University, Dunedin (New Zealand)

### Grants & Awards

06/2012 Travel Grant, Junior Scholar Committee of the International Society of Political Psychology, 500 \$  
05/2012 Workshop Organization Grant, Danish Political Science Research School, 5000\$ (with Lasse Laustsen, Aarhus University)  
04/2011 Warren E. Miller Scholarship, Inter-University Consortium Political Science Research, 2300 \$  
05/2010 Conference Participation. Royal Dutch Academy of Sciences Hendrik Müller Summer School

### Workshop organization

01/2013 Political Psychology workshop (3 days) by Professor Cindy Kam, Vanderbilt University (*with Lasse Laustsen, Aarhus University*)  
09/2012 Experimental Methodology workshop (3 days) by Professor John Bullock, Yale (*with Lasse Laustsen, Aarhus University*)  
08/2012 Introduction to R workshop (3 days) by Professor Peter Dalgaard Copenhagen Business School

**Reviewer** *Political Psychology* (3x)

**Conference presentations**

SARMAC Conference 2013  
CES Conference 2013  
ECPR 2013 (& *panel chair*)  
MPSA 2012, 2013  
Political Psychology 2012  
Politicologenetmaal 2012  
DPSA 2011

**Languages and Computer Skills**

Language: Dutch (Native), English (fluent), Danish (beginner)  
Computer skills STATA, Mplus, R, MS Office

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## Supplementary Material Chapter 2

### 2. A – Descriptive Statistics

**Table 2.A.1** Descriptive Statistics (wave 2010)

Variable	M	sd	%	N	Min	Max
Age <sup>b)</sup>	52.25	16.19		3612	18	90
Gender				3612		
Male			52.71			
Female			47.29			
Household Income <sup>a)</sup>	0.37	0.27		3357	0	1
Education						
Primary School			29.73	1074		
Vocational			37.71	1362		
Upper Secondary			7.81	282		
Professional			14.51	524		
Bachelor or higher			10.24	370		

- a. Household income before tax was scored 11 categories ranging from “lower than 99,999 Danish Kroner” through “more than 1 million Kroner” with a separate don’t know category. Household income was recoded to range from the lowest (0) through the highest (1) household income.

**Table 2.A. 2** Descriptive Statistics (wave 2011)

Variable	M	sd	%	N	Min	Max
Age <sup>b)</sup>	57.52	15.28		1972	19	91
Gender						
Male			53.96			
Female			46.06			
Household Income <sup>a)</sup>	0.42	0.25		1850	0	1
Education						
Primary School			24.24	478		
Vocational			44.37	875		
Upper Secondary			5.78	114		
Professional			14.05	277		
Bachelor or higher			11.56	228		

- a. Household income before tax was scored 11 categories ranging from “lower than 99,999 Danish Kroner” through “more than 1 million Kroner” with a separate don’t know category. Household income was recoded to range from the lowest (0) through the highest (1) household income.

## 2. B – Item Wording 2010 and 2011

**Table 2.B. 1** Item Wording Social Attitude Dimension

	Item wording
1	Violent crimes should be punished far more severely than they are today
2	We should safeguard our national heritage
3	Crime is better prevented with prevention and guidance than with harsh penalties.
4	Efforts to improve the environment must not go so far as to damage business.
5	Gays should have the same rights as all other groups in society.
6	The green taxes on gasoline should be increased.
7	Religious extremists should be allowed to hold public meetings.

Scored: "Totally Agree" (1) through "Totally Disagree" (4).

**Table 2.B. 2** Economic Attitude Dimension

	Item Wording
1	High income earners pay too little in taxes.
2	Income inequality is too great in this country and the greatest pay raise should be given to low income people.

Scored: "Totally Agree" (1) through "Totally Disagree" (4)

The social attitudes dimension has strong loading on the items we categorized under the social attitude dimension of political ideology in 2010 (see Table B.3) and 2011. The same pattern is observed for the economic attitude dimension.

**Table 2.B.3** Standardized Factor Loadings of the Social and Economic Attitude Dimensions in the Danish Sample (wave 2010)

		Social	Economic
1	Punish Violent crimes	0.69	
2	National customs	0.59	
3	Prevent crimes	0.62	
4	Preserve environment	0.54	
5	Rights homosexuals	0.49	
6	Green taxes	0.63	
7	Religious extremists	0.59	
1	Taxes high income		0.72
2	Income inequality		0.95

**Table 2.B. 4** Standardized Factor Loadings of the Social and Economic Attitude Dimensions in the Danish Sample (wave 2011)

		Social	Economic
1	Punish Violent crimes	0.70	
2	National customs	0.60	
3	Prevent crimes	0.63	
4	Preserve environment	0.59	
5	Rights homosexuals	0.45	
6	Green taxes	0.67	
7	Religious extremists	0.59	
1	Taxes high income		0.76
2	Income inequality		0.95

**Table 2.B.5.** Item wording NEO PI-R Short Version (Skovdahl-Hansen et al., 2004)

Facet		Wording
<b>Openness</b>		
Fantasy	1	I have a lively fantasy.
	2	I enjoy concentrating on a fantasy or a daydream and let it grow.
Actions	3	Poetry does not tell me much.
	4	Sometimes when I read a poem or looking at art, I feel a puff of pitch.
Aesthetics	5	I rarely experience strong emotions.
	6	It is the strangest thing - such as special scents or the names of distant places.
Feelings	7	I often try new and unfamiliar food.
	8	I find myself better in familiar surroundings.
Ideas	9	I think that philosophical discussions are boring.
	10	I have little interest in speculating over the universe mysteries or man.
Values	11	I think that controversial speakers only serve to confuse.
	12	I think that other people's perception of what is right and wrong, can differ.
<b>Conscientiousness</b>		
Achievement	1	I am not a very methodical and systematic person.
Striving	2	I seem never able to get things right.
Competence	3	I have some clear goals and work systematically towards them.
	4	I work hard to achieve my goals.
Deliberation	5	I think things through before I decide.
	6	I always consider the consequences before I act.
Dutifulness	7	I am a productive person who always get my work done.
	8	I find it hard to pull myself together to do the things I ought..
Order	9	I am known for my discernment and common sense.
	10	I bring myself often in situations where I'm not properly prepared.
Self-Discipline	11	Sometimes I'm not as reliable as I should be.
	12	I try to do my work carefully so not to do it again.
<b>Extraversion</b>		
Activity	1	I usually leaves others to speak at meetings.
	2	I do not find it easy to take control of a situation.
Assertiveness	3	I like having many people around me.
	4	I enjoy partying with lots of people.
Excitement	5	I really like to talk to people.
Seeking	6	I find it easy to smile and be outgoing with strangers.
Gregariousness	7	I like being in the heart of attention.
	8	I like to be among the crowd at sporting events.
Positive Emotions	9	I am a happy and cheerful person.
	10	I have ready laugh.
Warmth	11	I'm not as lively as mercury and other people.

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	12	I am a very active person.
<b>Agreeableness</b>		
Altruism	1	Some people think I'm selfish and self-absorbed.
	2	Some people consider me to be cold and calculating.
Compliance	3	I would rather cooperate with others than compete against them.
	4	I am stubborn and obstinate.
Modesty	5	I do not mind bragging about my skills and performance.
	6	I am better than most people - and I know it.
Straightforwardness	7	If necessary I am willing to manipulate people to achieve what I want.
	8	Sometimes pushes me directly or flatter people to do what I want.
Tender-Mindedness	9	We can never do too much too old and poor.
	10	I mean, that all people deserve respect.
Trust	11	I think that most people will use one if they can get away with it.
	12	I am inclined to believe the best about people.
<b>Neuroticism</b>		
Anxiety	1	I rarely feel anxious or uneasy.
	2	I often feel tense and nervous.
Anger	3	I am a balanced person.
	4	Even minor annoyances can make me frustrated.
Depression	5	Sometimes I feel that I am not fit for anything.
	6	I am rarely depressed or sad.
Impulsiveness	7	Sometimes I do something impulsively that I later regret.
	8	I am always able to control my emotions.
	9	Sometimes I have shamed myself so much that I just wanted to disappear.
Self-Consciousness	10	Compared to others I have often feelings of inferiority.
	11	When I am under great pressure, I feel sometimes that I'm about to break the same.
Vulnerability	12	It is often hard for me to decide.

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## 2. C – Model Specifications (wave 2010)

### Introduction

I tested how the FFM traits and sub-facets are correlated with the social and economic attitude dimensions employing a series of Confirmatory Factor Analyses. As outlined in the paper, I estimated a Facet Model where the facets are directly correlated with the attitude dimensions. In the Trait Model, the facets are treated as indicators of the trait and the trait is correlated with the attitude dimensions. In all analyses, I have employed the Weighted Least Squares with correction for Means and Variances (WLSMV) as our measures of the personality and ideology result in categorical data.<sup>56</sup> The model fit is assessed using the WLSMV robust Chi-square test of model fit as well as with the Comparative Fit Index (CFI), Tucker-Lewis Fit Index (TLI), the Root Mean Square Error of Approximation (RMSEA) and the Weighted Root Means Square Residual (WRMSR). In this appendix, I provide per FFM trait information about the model fit, parameter estimates and residual variances. Note that I only report the parameter estimates and residual variances of the Trait model as the results from the Facet model closely mirror the results of the Trait model. In separate tables, I also report the facets correlations of the Facet model.

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<sup>56</sup> Muthén, B. (1984). A general structural equation model with dichotomous, ordered categorical, and continuous latent variable indicators. *Psychometrika*, 49, 115-132.

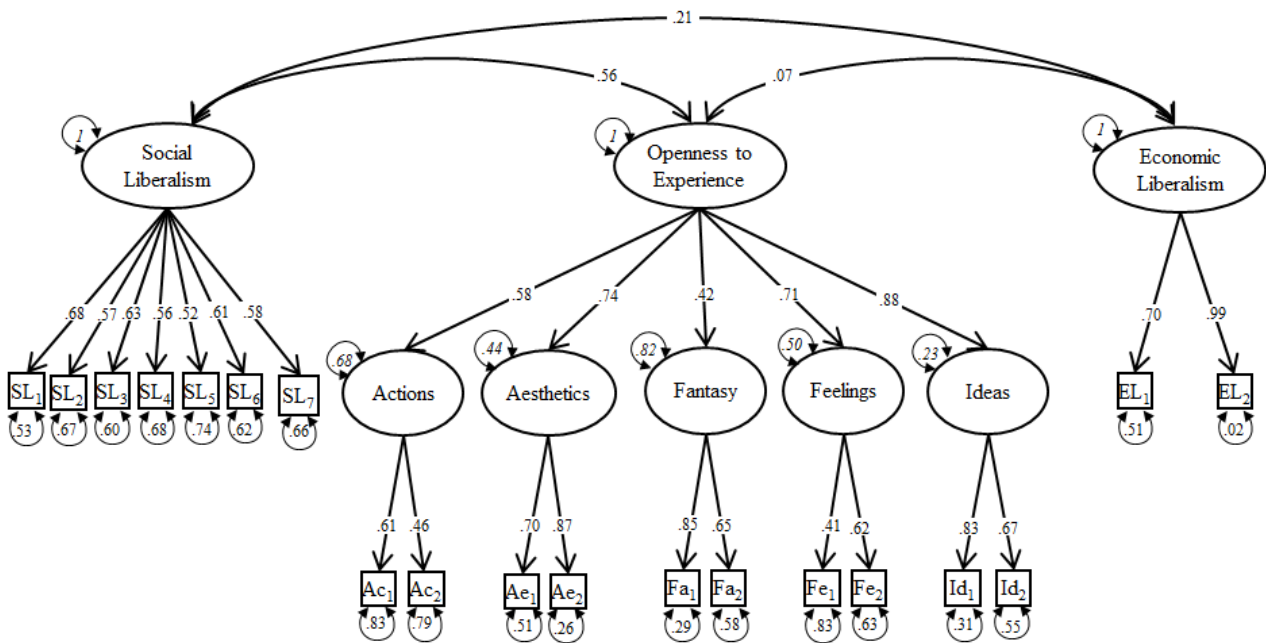
Muthén, B., Du Toit, S. H. C., Spisic, D. (1997). Robust inference using weighted least squares and quadratic estimating equations in latent variable modeling with categorical and continuous outcomes (Technical Report). Los Angeles: University of California, Los Angeles.

## Openness to Experience 2010

**Table 2.C.1** Model Fit Indices of the Trait and Facet Models

	Trait Model	Facet Model
Chi-square test of model fit	$\chi^2 (144) = 1696, p < .00$	$\chi^2 (131) = 1167, p < .00$
CFI	0.94	0.96
TLI	0.92	0.94
RMSEA	0.06 (0.052, 0.057)	.047 (0.044, 0.049)
WRMSR	2.50	1.94

**Figure 2.C.1** Factor Loadings and Residual Variances in the Trait Model



**Table 2.C.2** Correlations between the Openness Sub-facets in the Facet Model

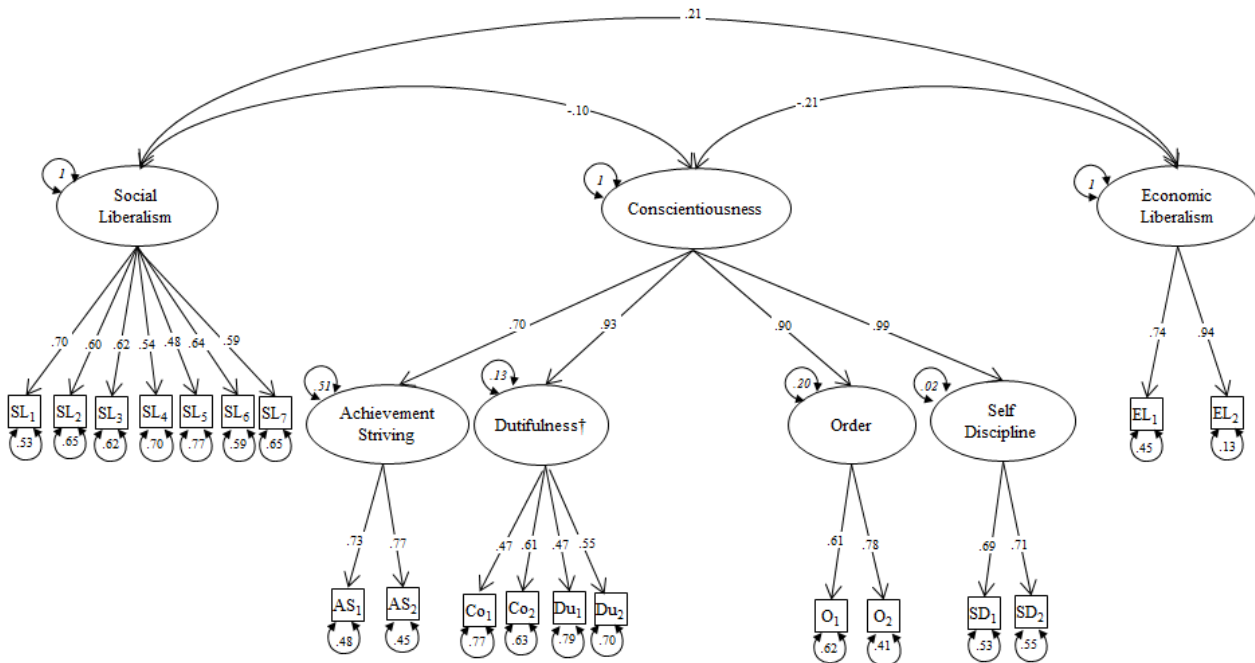
	Actions	Aesthetics	Fantasy	Feelings
Aesthetics	0.47			
Fantasy	0.24	0.26		
Feelings	0.47	0.62	0.57	
Ideas	0.46	0.66	0.32	0.47

## Conscientiousness 2010

**Table 2.C.4** Model Fit Indices of the Trait and Facet Models

	Trait Model	Facet model
Chi-square test of model fit	$\chi^2 (145) = 1491, p < .00$	$\chi^2 (137) = 1364, p < .00$
CFI	0.95	0.95
TLI	0.94	0.94
RMSEA	0.05 (0.048, 0.053)	0.05 (0.047, 0.052)
WRMSR	2.44	2.26

**Figure 2.C.2** Factor Loadings and Residual Variances in the Trait Model



† To avoid Heywood cases one Competence was merged with Dutifulness, whereas Deliberation was excluded from the analyses.

**Table 2.C.5** Correlations between the Conscientiousness Sub-facets in the Facet Model

	Achievement Striving	Dutifulness	Order
Dutifulness	0.63		
Order	0.54	0.87	
Self-Discipline	0.78	0.87	0.87

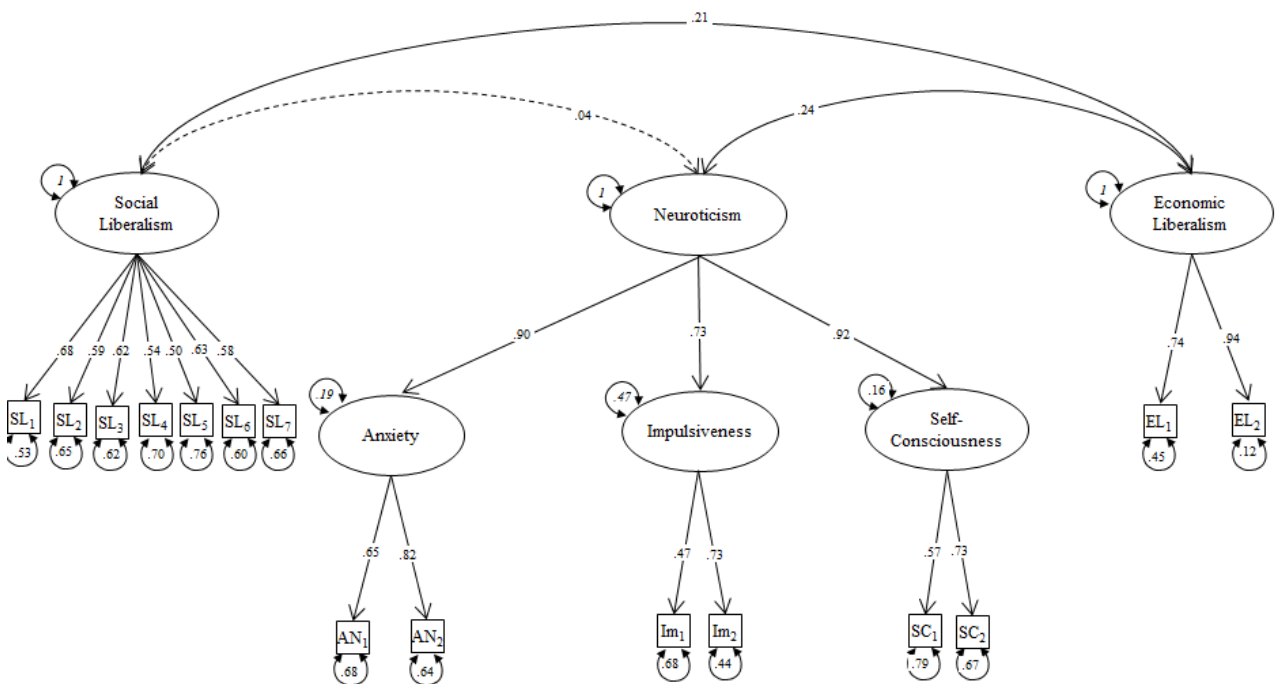


## Neuroticism 2010

**Table 2.C.7** Model Fit in the Trait and Facet Models

	Trait Model	Facet Model
Chi-square test of model fit	$\chi^2 (84) = 951, p < .00$	$\chi^2 (80) = 904, p < .00$
CFI	0.95	0.95
TLI	0.94	0.94
RMSEA	0.05 (0.050, 0.057)	0.05 (0.050, 0.057)
WRMSR	2.377	2.98

**Figure 2.C.3** Factor Loadings and Residual Variances in the Trait Model



† To avoid Heywood cases Anger, Depression, and Vulnerability were excluded

**Table 2.C.8** Correlations between the Neuroticism Sub-facets in the Facet Model

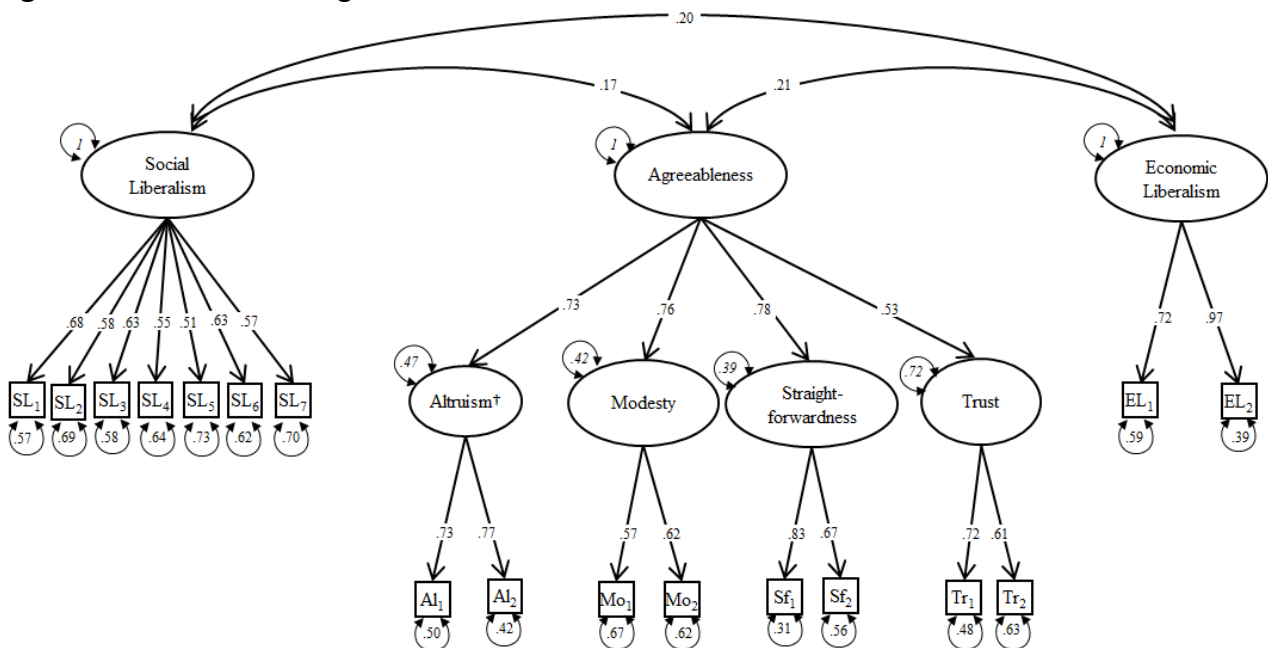
	Anxiety	Impulsiveness
Impulsiveness	0.65	-
Self-Conscientiousness	0.83	0.66

## Agreeableness 2010

**Table 2.C.10** Model Fit in the Trait and Facet Models

	Trait Model	Facet Model
Chi-square test of model fit	$\chi^2(112) = 2616, p < .00$	$\chi^2(104) = 929, p < .00$
CFI	0.87	0.96
TLI	0.84	0.94
RMSEA	0.079 (0.076, 0.081)	0.047 (0.044, 0.050)
WRMSR	3.612	1.999

**Figure 2.C.4** Factor Loadings and Residual Variances in the Trait Model



† To avoid Heywood cases Compliance was excluded from the analyses.

**Table 2.C.11** Correlations between the Agreeableness Sub-facets in the Facet Model

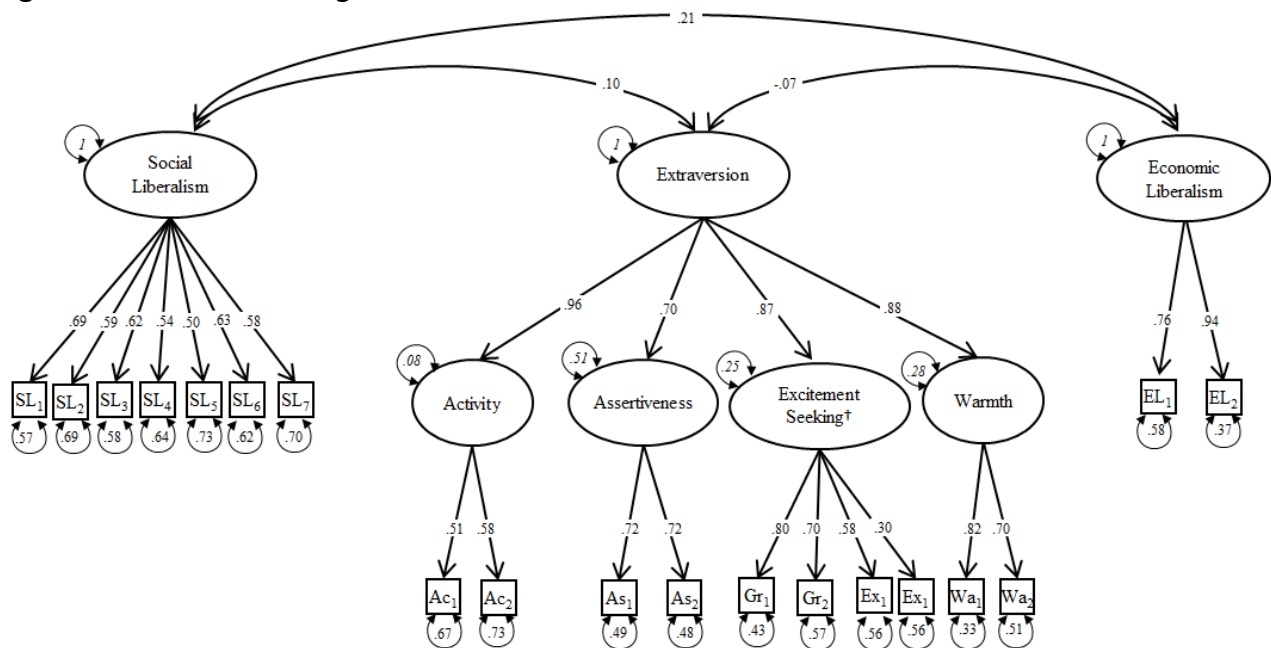
	Altruism	Modesty	Straightforwardness
Modesty	0.51		
Straightforwardness	0.55	0.78	
Trust	0.49	0.20	0.27

## Extraversion 2010

**Table 2.C.13** Model Fit in the Trait and Facet Models

	Trait Model	Facet Model
Chi-square test of model fit	$\chi^2(145) = 1941, p < .00$	$\chi^2(137) = 1707, p < .00$
CFI	0.93	0.94
TLI	0.92	0.93
RMSEA	0.059 (0.056, 0.061)	0.056 (0.054, 0.059)
WRMSR	2.835	2.543

**Figure 2.C.5** Factor Loadings and Residual Variances in the Trait Model



† To avoid Heywood cases Excitement Seeking was merged with Gregariousness, while Positive Emotions was excluded from the analyses.

**Table 2.C.14** Correlations between the Extraversion Sub-facets in the Facet Model

	Activity	Assertiveness	Excitement
Assertiveness	0.85		
Excitement	0.75	0.56	
Warmth	0.82	0.52	0.80

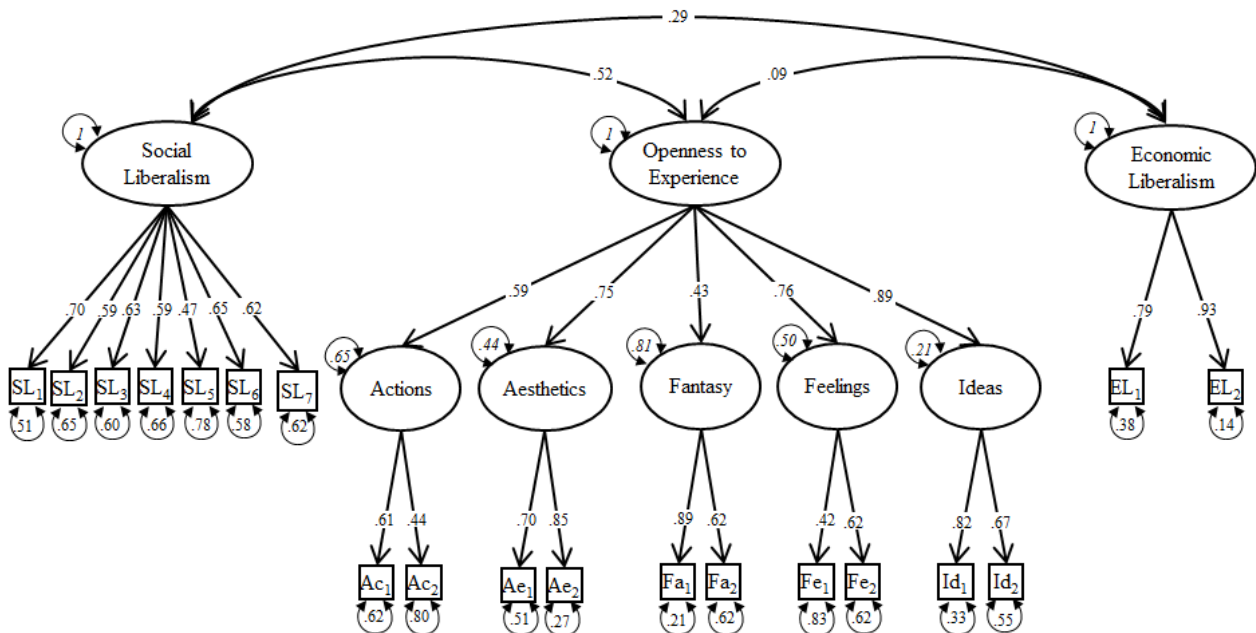
## 2. D – Model Specifications (wave 2011)

### Openness to Experience 2011

**Table 2.D.1** Model Fit Indices of the Trait and Facet Models

	Trait Model	Facet Model
Chi-square test of model fit	$\chi^2 (144) = 1094, p < .00$	$\chi^2 (131) = 843, p < .00$
CFI	0.93	0.95
TLI	0.92	0.93
RMSEA	0.06 (0.055, 0.061)	0.05 (0.049, 0.056)
WRMSR	2.03	1.66

**Figure 2.D.1** Factor Loadings and Residual Variances in the Trait Model



**Table 2.D.2** Correlations between the Openness Sub-facets in the Facet Model

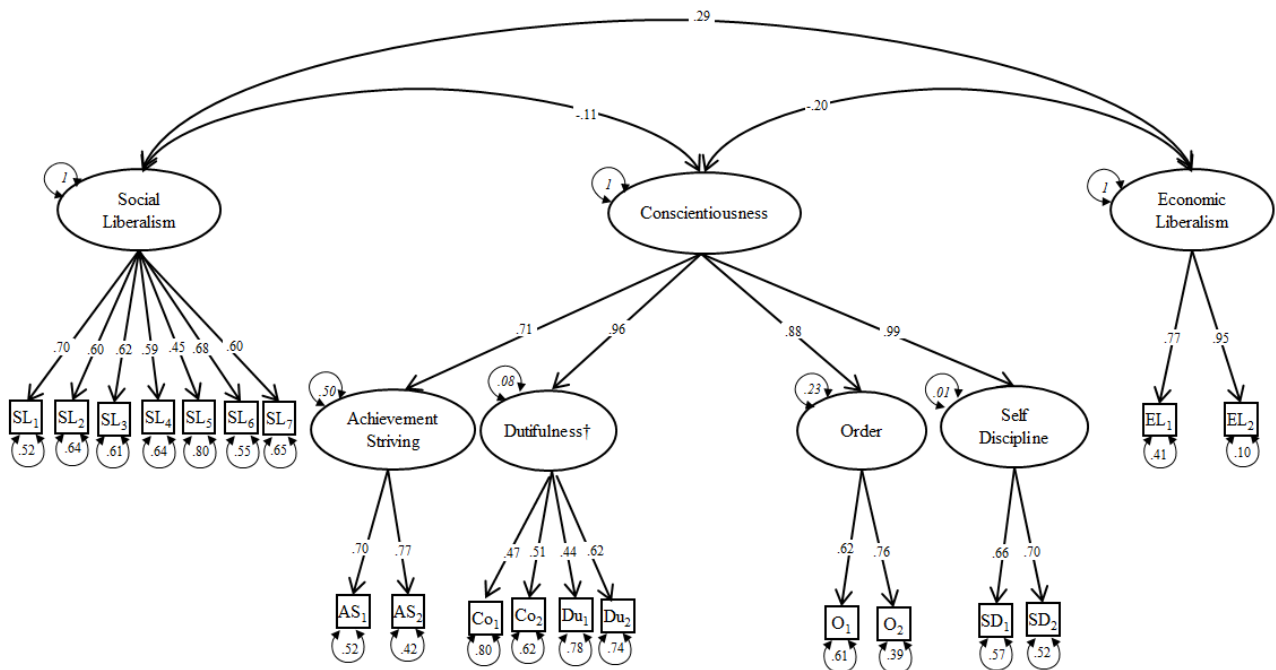
	Actions	Aesthetics	Fantasy	Feelings
Aesthetics	0.50			
Fantasy	0.34	0.27		
Feelings	0.53	0.66	0.61	
Ideas	0.46	0.66	0.34	0.56

## Conscientiousness 2011

**Table 2.D.4** Model Fit Indices of the Trait and Facet Models

	Trait Model	Facet model
Chi-square test of model fit	$\chi^2 (184) = 3782, p < .00$	$\chi^2 (137) = 940, p < .00$
CFI	0.77	0.94
TLI	0.74	0.93
RMSEA	0.10 (0.97, 0.102)	0.06 (0.051, 0.058)
WRMSR	3.85	1.88

**Figure 2.D.2** Factor Loadings and Residual Variances in the Trait Model



† To avoid Heywood cases one Competence was merged with Dutifulness, whereas Deliberation was excluded from the analyses.

**Table 2.D.5** Correlations between the Conscientiousness Sub-facets in the Facet Model

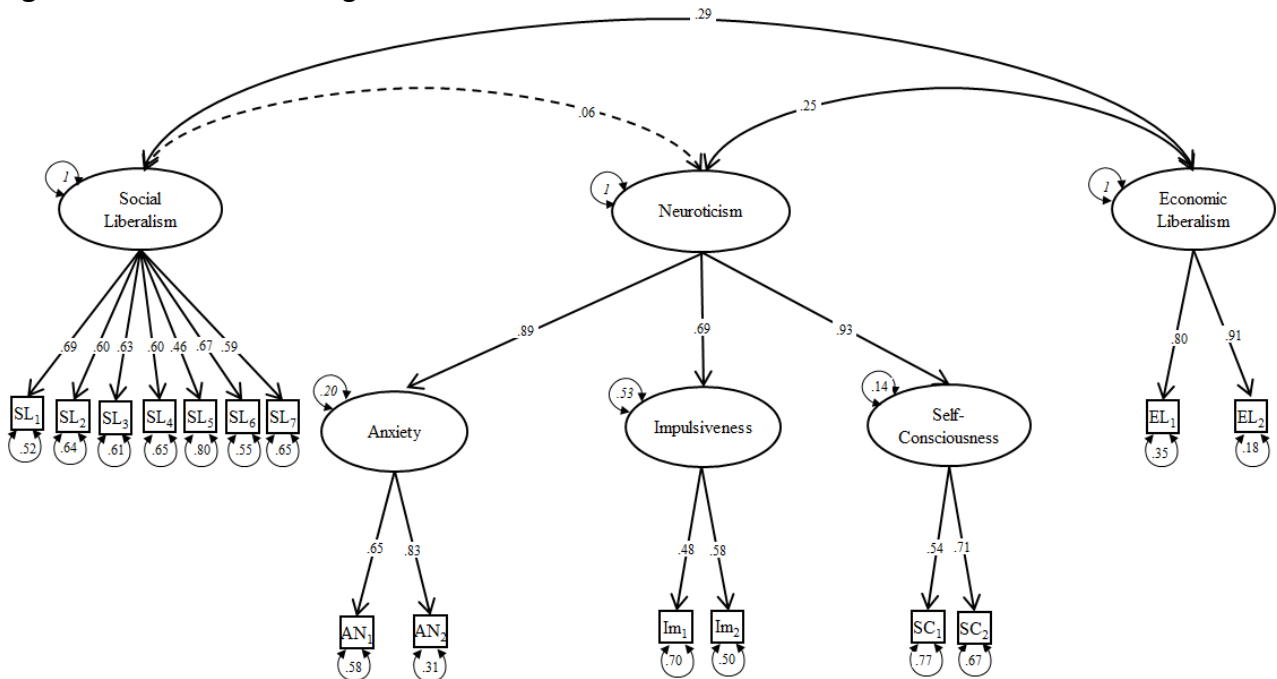
	Achievement Striving	Dutifulness	Order
Dutifulness	0.67		
Order	0.87	0.93	
Self-Discipline	0.77	0.91	0.87

## Neuroticism 2011

**Table 2.D.7** Model Fit in the Trait and Facet Models

	Trait Model	Facet Model
Chi-square test of model fit	$\chi^2(84) = 731, p < 0.00$	$\chi^2(80) = 720, p < 0.00$
CFI	0.94	0.94
TLI	0.92	0.92
RMSEA	0.06 (0.058, 0.067)	0.06 (0.059, 0.068)
WRMSR	2.09	1.98

**Figure 2.D.3** Factor Loadings and Residual Variances in the Trait Model



† To avoid Heywood cases Anger, Depression, and Vulnerability were excluded

**Table 2.D.8** Correlations between the Neuroticism Sub-facets in the Facet Model

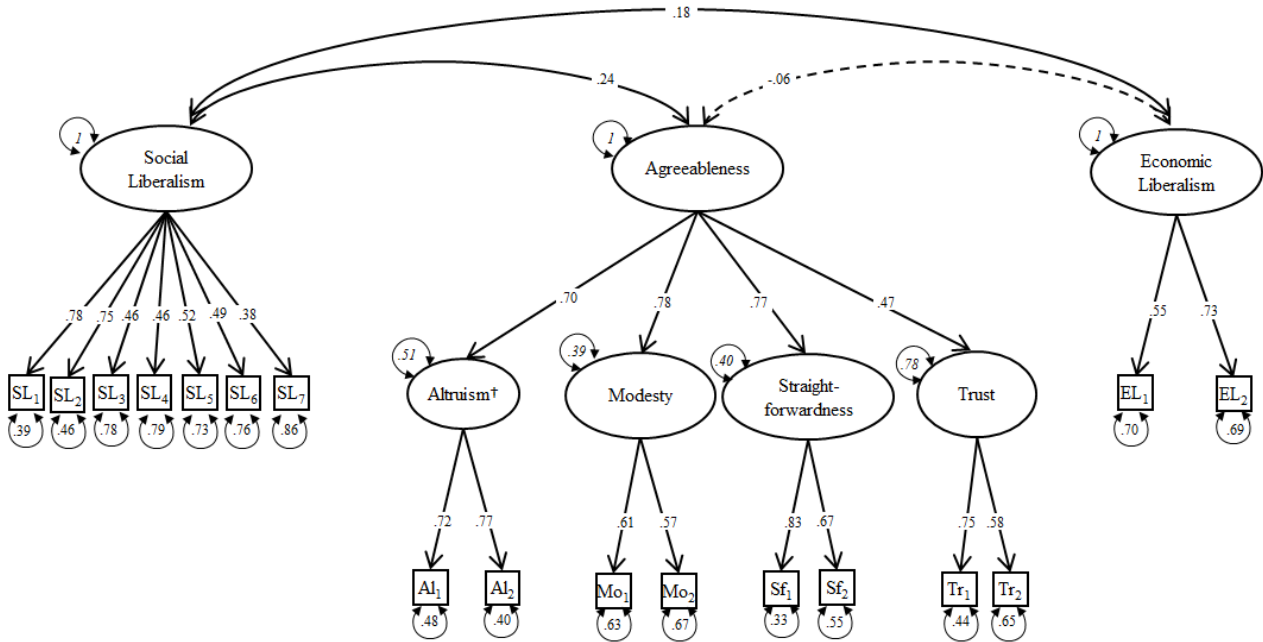
	Anxiety	Impulsiveness
Impulsiveness	0.60	
Self-Conscientiousness	0.83	0.63

## Agreeableness 2011

**Table 2.D.10** Model Fit in the Trait and Facet Models

	Trait Model	Facet Model
Chi-square test of model fit	$\chi^2 (112) = 2490, p < 0.00$	$\chi^2 (104) = 753, p < .00$
CFI	0.77	0.94
TLI	0.71	0.93
RMSEA	0.104 (0.100, 0.107)	0.056 (0.052, 0.060)
WRMSR	3.67	1.79

**Figure 2.D.4** Factor Loadings and Residual Variances in the Trait Model



† To avoid Heywood cases Compliance was excluded from the analyses.

**Table 2.D.11** Correlations between the Agreeableness Sub-facets in the Facet Model

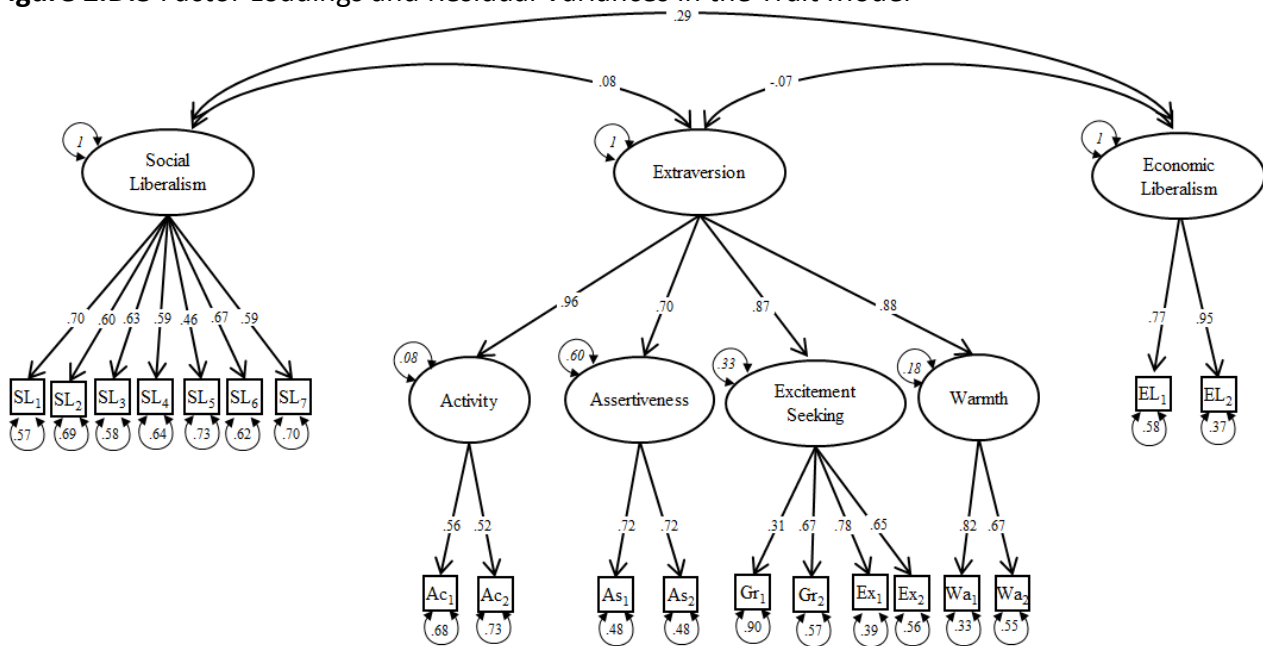
	Altruism	Modesty	Straightforwardness
Modesty	0.48		
Straightforwardness	0.52	0.77	
Trust	0.46	0.17	0.23

**Extraversion 2011**

**Table 2.D.13** Model Fit in the Trait and Facet Models

	Trait Model	Facet Model
Chi-square test of model fit	$\chi^2 (145) = 1287, p < .00$	$\chi^2 (137) = 1146, p < .00$
CFI	0.92	0.93
TLI	0.91	0.91
RMSEA	0.063 (0.060, 0.066)	0.061 (0.058, 0.065)
WRMSR	2.33	2.08

**Figure 2.D.5** Factor Loadings and Residual Variances in the Trait Model



† To avoid Heywood cases Excitement Seeking was merged with Gregariousness, while Positive Emotions was excluded from the analyses.

**Table 2.D.14** Correlations between the Extraversion Sub-facets in the Facet Model

	Activity	Assertiveness	Excitement
Assertiveness	0.34		
Excitement	0.31	0.27	
Warmth	0.38	0.28	0.51



## Supplementary Material Chapter 3

### 3. A – Overview studies

In this overview, I only include studies that have related FFM personality traits to economic attitudes. Studies focusing upon social attitudes or one-dimensional operationalization of ideology are not included (Sibley et al., 2012). In this section I will discuss the characteristics of the studies that have related the FFM personality traits to economic attitudes. Table 3.A.1 summarizes the essential characteristics of each study. Specifically, column 1 provides the name of the study, followed by the country in which the study was conducted and the size of the sample. Per study, I listed in brackets if the sample was a convenience sample of, for instance, university students. Fourth column provides the specification of the personality battery included. In brackets the total number of items of the specific personality battery are listed. In the fifth panel, I provided the item wording of the item(s) tapping into economic attitudes.

**Table 3.A.1** Economic attitudes in personality studies

Study	Country	Sample	Personality	Dependent variable
Gerber et al. (2011, p. 272)	US	N=10,559	TIPI (#10)	<b>1 item:</b> “The federal budget is currently running a substantial deficit. If Congress were to balance the budget it would have to consider cutting expenditures, including on defense and domestic programs such as Medicare, and raising taxes. What would you prefer more: raising taxes or cutting spending?” <i>Scored:</i> 0 (tax increases) to 100 (spending cuts)
Gerber et al. (2010, p.116)	US	N=12,472	TIPI (#10)	<b>2 items</b> <i>Government Health Care:</i> “Which comes closest to your view about providing health care in the United States?” <i>Scored:</i> 0 = Health insurance should be voluntary. Individuals should either buy insurance or obtain it through their employers as they do currently. The elderly and the very poor should be covered by Medicare and Medicaid as they are currently 1 = Companies should be required to provide health insurance for their employees, and the government should provide subsidies for those who are not working or retired 2 = The government should provide everyone with health care and pay for it with tax dollars.) <i>Tax increase:</i> “Do you favor raising federal taxes on families earning more than \$200,000 per year?” <i>Scored:</i> “Strongly oppose”, “Somewhat oppose”, “Somewhat favor”, “Strongly favor”
Carney et al. (2008, p. 820)	US	N=536 (students)	TIPI (#10)	<b>1 item:</b> “In terms of economic issues (e.g., taxation, welfare, privatization of social security), where would you place yourself on the following scale?” <i>Scored:</i> (1) “extremely liberal” through (5) “extremely conservative”
Van Hiel and Mervielde (2004, study 2)	Belgium	N=225 convenience	NEO-PI-R (#240)	<b>12 items:</b> Item wording is not reported in study. Examples items were: 1. “Trade unions should have more to say in companies” 2. “Economic growth can only be realized when the government allows unrestricted private enterprise” 3. “The government should compel employers and organizations to create more jobs”
Leeson and Heavon (1999)	Australia	N=103	BFI (#112)	<b>8 items:</b> not all reported in the study <i>Left-wing:</i> “strikes” and “picket lines” <i>Right-wing:</i> “free enterprise”, “profit” and four more that were not mentioned
Riemann et al. (1993, p. 316)	Germany	N=184	NEO FFI (#60)	“child care at work place”; “promotion of alternative energy sources”; “youth training places”; “increase in cycle paths”; “tightening of the abortion bill” “EC surplus to USSR”; “convalescent leave for mothers”; “more child care centers”; “wage equality”; “legal claim to preschool places”; “integration of handicapped in schools”; “animal mass production”

(#.) signals the number of items used to measure personality

### 3. B – Sample Description Danish sample

**Table 3.B. 1** Descriptive Statistics (*Danish sample*)

Variable	M	SD	%	N	Min.	Max.	#Items	Alpha
Economic Attitudes	0.52	0.30		1905	0	1	2	0.78
Openness	0.52	0.15		2012	0	1	12	0.73
Conscientiousness	0.60	0.14		2012	0	1	12	0.78
Extraversion	0.58	0.15		2012	0	1	12	0.80
Agreeableness <sup>1</sup>	0.62	0.13		2012	0	1	10	0.72
Neuroticism	0.40	0.15		2012	0	1	12	0.84
Household Income	0.54	0.23		1897	0	1	1	
Sectoral employment								
Private			62.28	1253				
Public			37.72	759				
Age	47.88	11.53		2012	18	89		
Age <sup>2</sup> /100	24.26	11.05			3.24	79.21		
Gender								
Male			55.32	1113				
Female			44.68	899				
Ethnicity								
Danish			94.83	1907				
Non-Danish mixed			3.78	76				
Non-Danish			1.39	28				

<sup>1</sup>The two items measuring the sub-facet Tender-Mindedness were excluded from the trait.

**Table 3.B.2** Item Wording NEO PI-R Short Version

<b>Facet</b>		<b>Wording</b>
<b>Openness</b>		
Fantasy	1	I have a lively fantasy.
	2	I enjoy concentrating on a fantasy or a daydream and let it grow.
Actions	3	Poetry does not tell me much.
	4	Sometimes when I read a poem or looking at art, I feel a puff of pitch.
Aesthetics	5	I rarely experience strong emotions.
	6	It is the strangest thing - such as special scents or the names of distant places.
Feelings	7	I often try new and unfamiliar food.
	8	I find myself better in familiar surroundings.
Ideas	9	I think that philosophical discussions are boring.
	10	I have little interest in speculating over the universe mysteries or man.
Values	11	I think that controversial speakers only serve to confuse.
	12	I think that other people's perception of what is right and wrong, can differ.
<b>Conscientiousness</b>		
Achievement	1	I am not a very methodical and systematic person.
Striving	2	I seem never able to get things right.
Competence	3	I have some clear goals and work systematically towards them.
	4	I work hard to achieve my goals.
Deliberation	5	I think things through before I decide.
	6	I always consider the consequences before I act.
Dutifulness	7	I am a productive person who always get my work done.
	8	I find it hard to pull myself together to do the things I ought..
Order	9	I am known for my discernment and common sense.
	10	I bring myself often in situations where I'm not properly prepared.
Self-Discipline	11	Sometimes I'm not as reliable as I should be.
	12	I try to do my work carefully so not to do it again.
<b>Extraversion</b>		
Activity	1	I usually leaves others to speak at meetings.
	2	I do not find it easy to take control of a situation.
Assertiveness	3	I like having many people around me.
	4	I enjoy partying with lots of people.
Excitement	5	I really like to talk to people.
Seeking	6	I find it easy to smile and be outgoing with strangers.
Gregariousness	7	I like being in the heart of attention.
	8	I like to be among the crowd at sporting events.
Positive Emotions	9	I am a happy and cheerful person.
	10	I have ready laugh.

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Warmth	11	I'm not as lively as mercury and other people.
	12	I am a very active person.
<b>Agreeableness</b>		
Altruism	1	Some people think I'm selfish and self-absorbed.
	2	Some people consider me to be cold and calculating.
Compliance	3	I would rather cooperate with others than compete against them.
	4	I am stubborn and obstinate.
Modesty	5	I do not mind bragging about my skills and performance.
	6	I am better than most people - and I know it.
	7	If necessary I am willing to manipulate people to achieve what I want.
Straightforwardness	8	Sometimes pushes me directly or flatter people to do what I want.
Tender-Mindedness	9	We can never do too much too old and poor.
	10	I mean, that all people deserve respect.
Trust	11	I think that most people will use one if they can get away with it.
	12	I am inclined to believe the best about people.
<b>Neuroticism</b>		
Anxiety	1	I rarely feel anxious or uneasy.
	2	I often feel tense and nervous.
Anger	3	I am a balanced person.
	4	Even minor annoyances can make me frustrated.
Depression	5	Sometimes I feel that I am not fit for anything.
	6	I am rarely depressed or sad.
Impulsiveness	7	Sometimes I do something impulsively that I later regret.
	8	I am always able to control my emotions.
	9	Sometimes I have shamed myself so much that I just wanted to disappear.
Self-Consciousness	10	Compared to others I have often feelings of inferiority.
	11	When I am under great pressure, I feel sometimes that I'm about to break the same.
Vulnerability	12	It is often hard for me to decide.

---

**Table 3.B.3** Factor Loadings Five Factor model whereby the item numbers resemble the item wordings in Table 3.B.2

	<b>Openness</b>	<b>Conscientiousness</b>	<b>Extraversion</b>	<b>Agreeableness</b>	<b>Neuroticism</b>
1	0.38				
2	0.33				
3	0.57				
4	0.67				
5	0.33				
6	0.43				
7	0.38				
8	0.32				
9	0.62				
10	0.54				
11	0.36				
12	0.25				
1		0.43			
2		0.52			
3		0.46			
4		0.62			
5		0.46			
6		0.38			
7		0.51			
8		0.49			
9		0.56			
10		0.63			
11		0.29			
12		0.28			
1			0.66		
2			0.64		
3			0.58		
4			0.54		
5			0.46		
6			0.49		
7			0.55		
8			0.48		
9			0.53		
10			0.23		
11			0.66		
12			0.51		
1				0.39	
2				0.29	
3				0.60	
4				0.53	
5				0.58	
6				0.60	

7				0.37	
8				0.41	
9				0.44	
10				0.45	
1					0.60
2					0.70
3					0.54
4					0.56
5					0.67
6					0.63
7					0.50
8					0.68
9					0.28
10					0.36
11					0.63
12					0.55

Table 3.B.4 shows the correlations between the independent variables. The personality traits correlate modestly with each other. In line with earlier research, income is positive but weakly associated with conscientiousness and extraversion, whereas there are weak negative correlations between income and the traits agreeableness and neuroticism.

**Table 3.B.4** Correlation between Independent Variables

	1	2	3	4	5	6
1 Economic Attitudes	-					
2 Income	-0.33*	-				
3 Openness	0.07*	0.05*	-			
4 Conscientiousness	-0.13*	0.19*	0.06*	-		
5 Extraversion	-0.06*	0.17*	0.36*	0.33*	-	
6 Agreeableness	0.17*	-0.05*	0.06*	0.12*	0.03	-
7 Neuroticism	0.16*	-0.20*	-0.03	-0.53*	-0.44*	-0.09*

\* $p < 0.05$



### 3. C – Sample Description US Sample

**Table 3.C.1** Descriptive Statistics (*US sample*)

Variable	M	SD	%	N	Min.	Max.	#Items	<i>r</i>	Alpha
Openness	0.70	.019		5457	0	1	2	0.27	0.41
Conscientiousness	0.78	0.19		5457	0	1	2	0.40	0.54
Extraversion	0.54	0.25		5457	0	1	2	0.44	0.61
Agreeableness	0.68	0.20		5457	0	1	2	0.25	0.38
Neuroticism	0.32	0.22		5457	0	1	2	0.47	0.63
Household Income	0.60	0.26		5109	0	1	1		
Employment status									
Full-time			79.93	4362					
Part-time			20.07	1095					
Age	44.78	12.47		5457	18	85			
Age <sup>2</sup> /100	21.61	11.41		5457	3.24	72.25			
Gender									
Male			56.02	3057					
Female			43.98	2400					
Ethnicity									
White			72.46	3954					
Black			10.28	561					
Hispanic			11.87	648					
Other			5.39	294					

#### Model Fit TIPI

The TIPI was developed to measure the broad personality traits using only 2 items per trait. The goal of the TIPI was to create an instrument which is (1) reliable, (2) valid and (3) quick to administer (Gosling et al., 2003). The scores of the TIPI are highly correlated with longer personality batteries (Gosling et al., 2003, Table 6 & Table 9). Table C.1 shows that the correlations between the items and the Cronbach alpha values are in line with those reported in others studies (Gerber, Huber, et al., 2010; Gosling et al., 2003). In sum the TIPI employed in the US sample has similar model characteristics as previous studies which relied upon the TIPI (see Table 3.C.2 for the item-wording).

**Table 3.C.2** Item Wording TIPI

Item Wording	
Openness	I see myself as open to new experiences, complex. I see myself as conventional, uncreative. (R)
Conscientiousness	I see myself as dependable, self-disciplined I see myself as disorganized, careless. (R)
Extraversion	I see myself as extraverted, enthusiastic. I see myself as reserved, quiet. (R)
Agreeableness	I see myself as sympathetic, warm. I see myself as critical, quarrelsome. (R)
Neuroticism	I see myself as anxious, easily upset. <sup>1</sup> I see myself as calm, emotionally stable. (R)

Note: (R) signals reversed scored items.

Table 3.C.3 shows the correlations between the independent variables. The personality traits correlate modestly. In line with earlier research, income is positive but weakly associated with openness, conscientiousness and extraversion, whereas there are weak negative correlations between income and neuroticism. Agreeableness is unrelated to income.

**Table 3.C.3** Correlation between Independent Variables

	1	2	3	4	5	6
1 Economic Attitudes	-					
2 Income	-0.12*	-				
3 Openness	0.08*	0.07*	-			
4 Conscientiousness	-0.09*	0.13*	0.17*	-		
5 Extraversion	-0.03*	0.14*	0.32*	0.14*	-	
6 Agreeableness	-0.08*	-0.02	0.21*	0.22*	0.00	-
7 Neuroticism	-0.06*	-0.14*	-0.22*	-0.31*	-0.12*	-0.39*

\* $p < .05$

### **3. D – Pairwise Interaction Models**

#### **Introduction**

The moderating effect of income on the association a personality traits and redistribution preferences might be conditional upon the association of a trait with another trait (Kam & Franzese, 2007, p. 41). In this section I show that my results are robust controlling for the interactions between the personality traits (projected on the gray panels).

## Danish sample

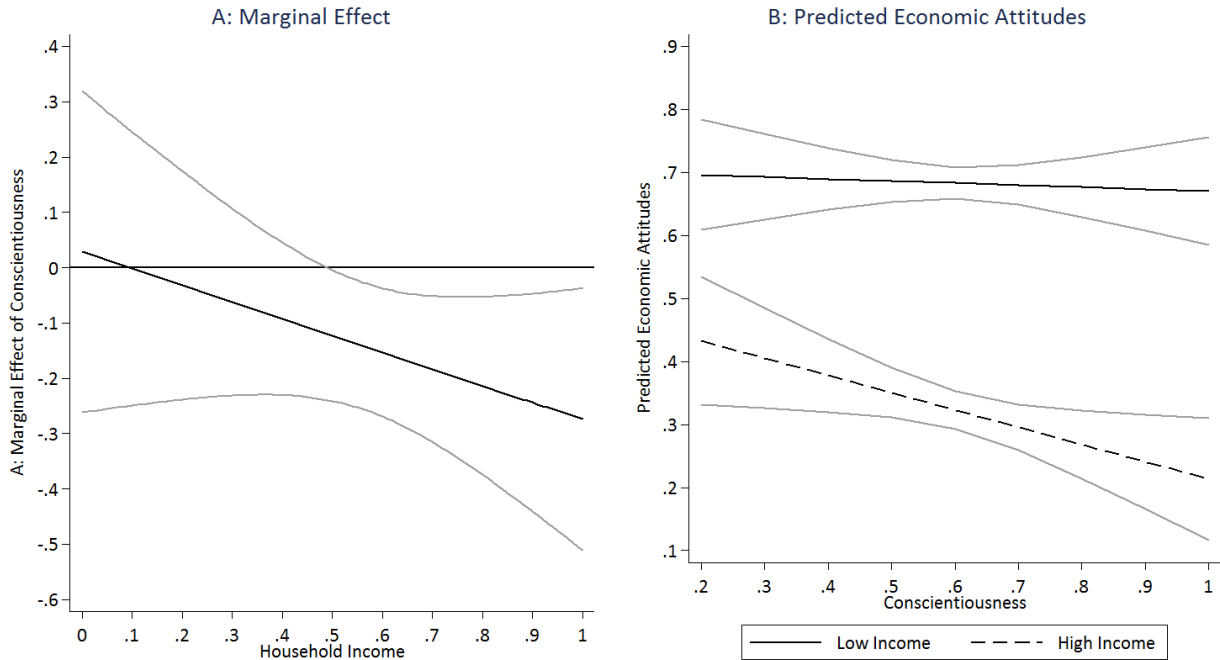
As can be seen in Table 3.D.1 and Figures 3.D.1 and Figure 3.D.2 the results are robust controlling for the correlations between the personality traits.

**Table 3.D.1** Personality, Income and Redistribution Preferences Controlling for Correlation between Personality Traits (*Danish sample*)

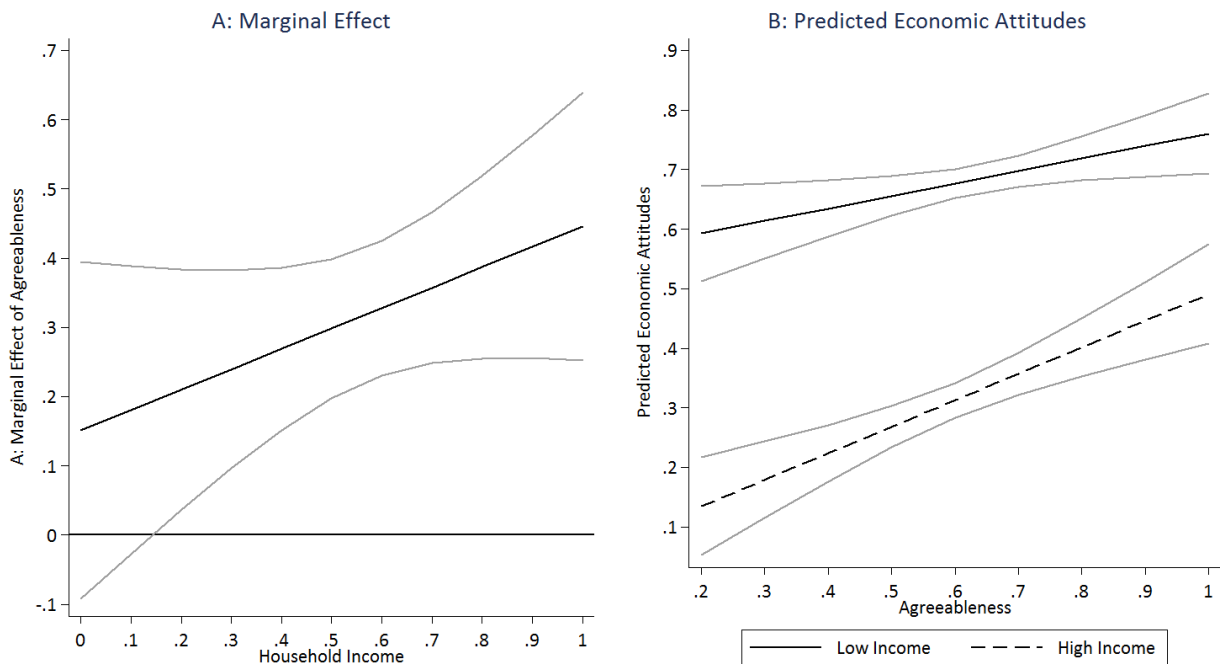
	1	
Openness	0.52	(0.45)
Conscientiousness	0.32	(0.43)
Extraversion	-0.18	(0.47)
Agreeableness	-0.13	(0.45)
Neuroticism	0.48	(0.40)
Income	-0.45	(0.29)
Female	-0.01	(0.01)
Age	0.03*	(0.00)
Age2/100	-0.03*	(0.00)
Ethnicity (Ref. Danish)		
Mixed	-0.09*	(0.03)
Non-Danish	0.01	(0.06)
Public sector employee	0.08*	(0.01)
Personality Traits X Income		
Openness X Income	0.27	(0.20)
Conscientiousness X Income	-0.30	(0.24)
Extraversion X Income	-0.22	(0.24)
Agreeableness X Income	0.29	(0.20)
Neuroticism X Income	0.03	(0.24)
<b>Trait Interactions</b>		
Openness X Conscientiousness	-0.75	(0.40)
Openness X Extraversion	-0.10	(0.31)
Openness X Agreeableness	0.27	(0.31)
Openness X Neuroticism	-0.51	(0.35)
Conscientiousness X Extraversion	0.19	(0.42)
Conscientiousness X Agreeableness	-0.22	(0.41)
Conscientiousness X Neuroticism	0.39	(0.34)
Extraversion X Agreeableness	0.56	(0.40)
Extraversion X Neuroticism	-0.11	(0.36)
Agreeableness X Neuroticism	-0.15	(0.40)
Constant	-0.46	(0.41)
N	1808	
R <sup>2</sup>	0.23	

OLS regression coefficients with robust standard errors are reported in the parentheses. \*  $p < 0.05$

**Figure 3.D.1** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Conscientiousness are reported in Panel B (*Danish sample*)



**Figure 3.D.2** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Agreeableness are reported in Panel B (*Danish sample*)



## US sample

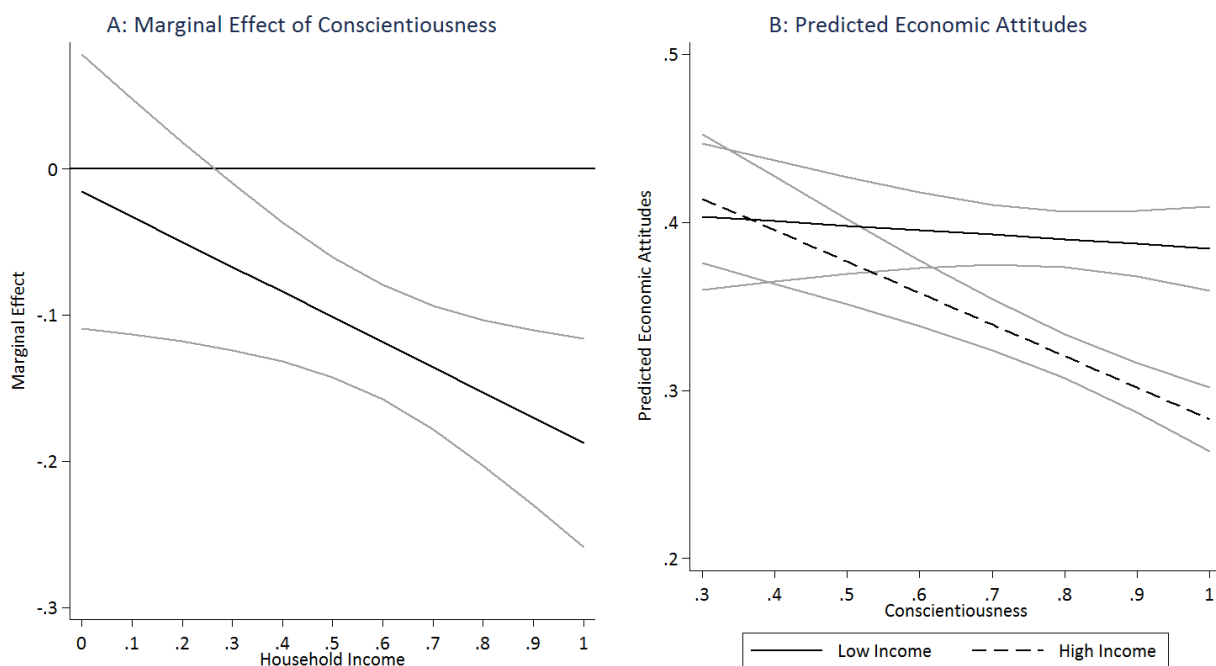
In the US sample I include the interactions between the personality traits (see Table 3.D.2) and show in Figure 3.D.3-5 that the results closely mirror the results reported in the study.

**Table 3.D.2** Personality, Income and Redistribution Preferences Controlling for Correlations between Personality Traits (*US sample*)

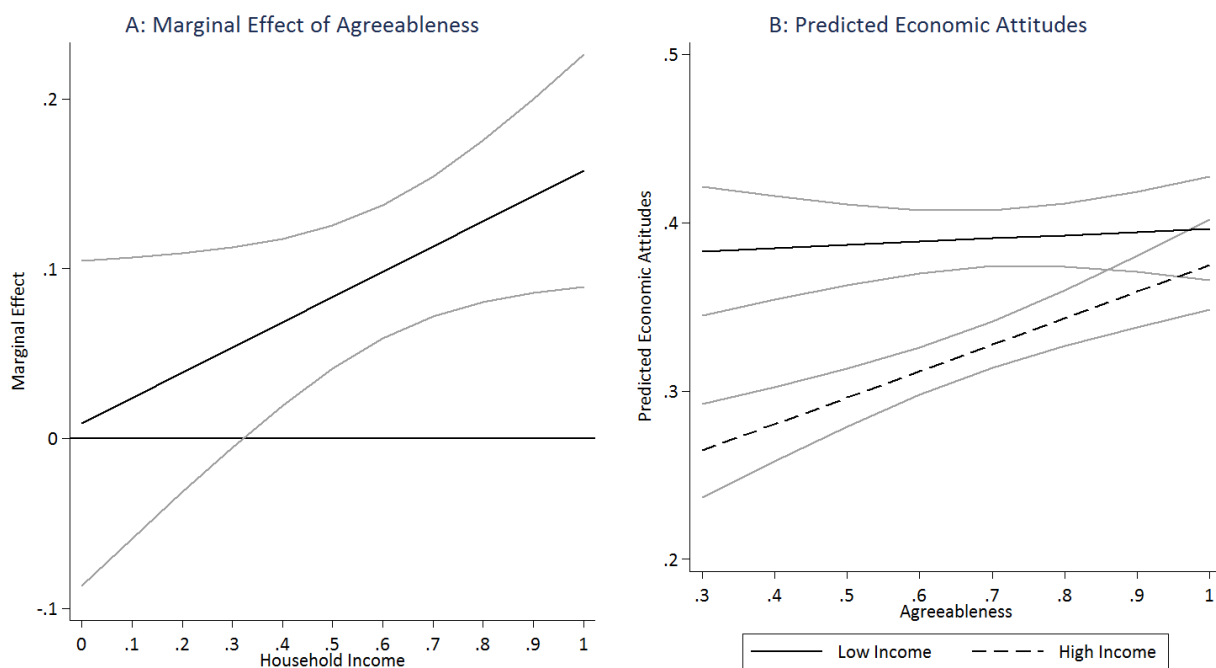
	Pairwise Interaction	
Openness	0.34*	(0.12)
Conscientiousness	-0.03	(0.12)
Extraversion	0.13	(0.10)
Agreeableness	-0.03	(0.12)
Neuroticism	-0.09	(0.11)
Income	-0.05	(0.10)
Female	0.05*	(0.01)
Age	0.01*	(0.00)
Age <sup>2</sup> /100	-0.01*	(0.00)
Ethnicity(ref. White)		
Black	0.10*	(0.01)
Hispanic	0.04*	(0.01)
Other	-0.03*	(0.02)
Employment Status (ref. Full-Time)		
Part-time	-0.01	(0.01)
Income X Personality		
Openness X Income	0.07	(0.07)
Conscientiousness X Income	-0.17*	(0.07)
Extraversion X Income	-0.09	(0.06)
Agreeableness X Income	0.15*	(0.07)
Neuroticism X Income	0.02	(0.08)
Trait Interactions		
Openness X Conscientiousness	-0.18	(0.10)
Openness X Extraversion	-0.08	(0.07)
Openness X Agreeableness	0.06	(0.10)
Openness X Neuroticism	-0.12	(0.09)
Conscientiousness X Extraversion	-0.04	(0.10)
Conscientiousness X Agreeableness	0.14	(0.10)
Conscientiousness X Neuroticism	0.08	(0.09)
Extraversion X Agreeableness	-0.09	(0.07)
Extraversion X Neuroticism	-0.08	(0.07)
Agreeableness X Neuroticism	0.07	(0.08)
State Fixed Effects	Yes	
Constant	0.41 *	(0.09)
N	5109	
R <sup>2</sup>	.09	

OLS regression coefficients with robust standard errors and state fixed effects (not shown in the table) are reported in the parentheses. \*  $p < 0.05$

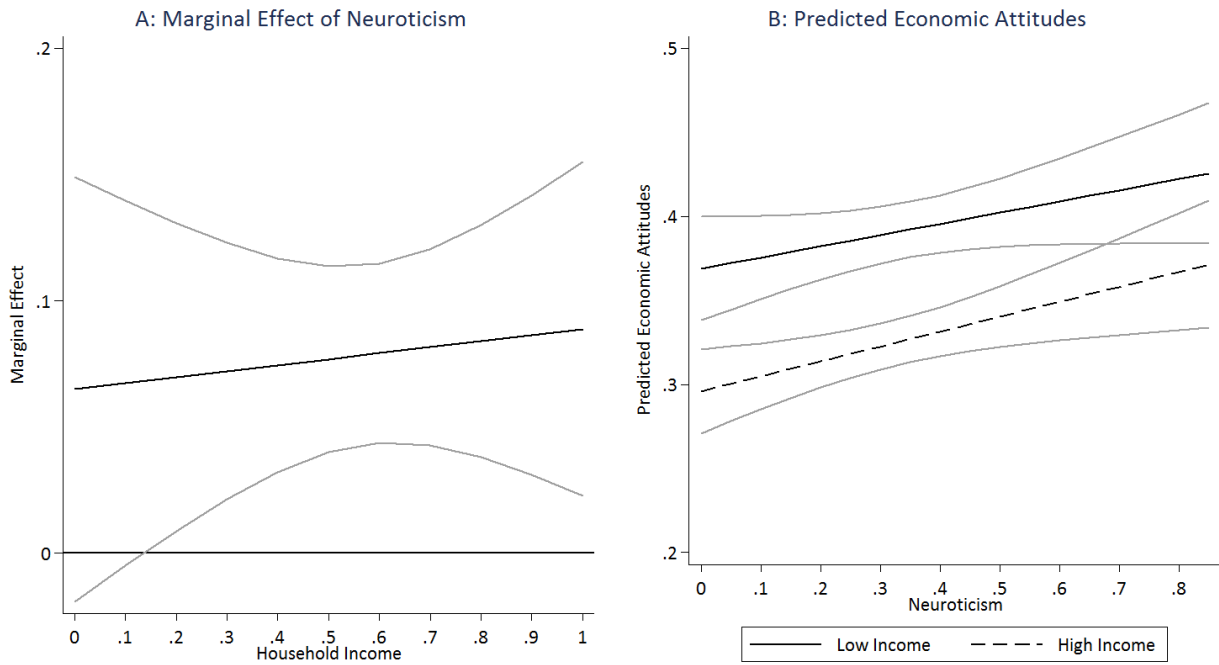
**Figure 3.D.3** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Conscientiousness are reported in Panel B (*US sample*)



**Figure 3.D.4** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Agreeableness are reported in Panel B (*US sample*)



**Figure 3.D.5** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Neuroticism are reported in Panel B (*US sample*)





### **3. E – Education, Union Membership, and Religiosity**

#### **Introduction**

In this appendix, I show that the results are robust for education, union membership and religiosity in the Danish and US sample.

#### **Danish sample**

In the Danish sample education is scored in five categories, namely primary education (N = 549; 27.29%), vocational education (N = 804; 39.96%), upper secondary education (N = 105; 5.22%), medium-cycle tertiary education (N = 312; 15.51%), and long-cycle tertiary education (N = 242; 12.03%). Union membership is measured by a categorical variable with four categories, being: never been a member (N = 368; 18.34%), former member (N = 240; 11.96%), member but not active (N = 1,001; 49.88%), and active member (N = 398; 19.83%). Religiosity is scored into three categories being Christian (N = 1491; 74.81%), other (N = 29; 1.46%) and non-religious (N = 473; 23.73%).

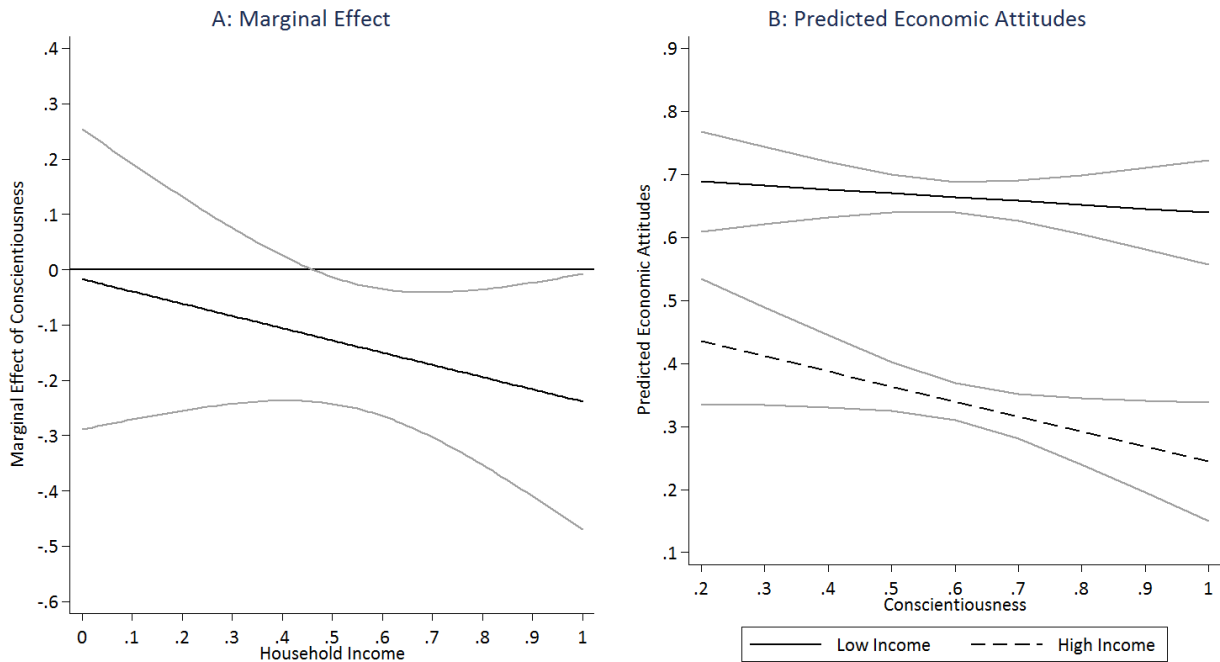
The results presented in Table 3.E.1 suggest that the higher educated are more opposed to redistribution. Moreover, I find that the non-religious individuals are more likely to prefer redistribution which is in line with the literature. Most importantly, the substantive conclusions drawn in this study do not change controlling for education and religiosity as can be seen in model 2 and the plots of the marginal effects and predicted preferences for redistribution in Figure 3.E.1 and Figure 3.E.2.

**Table 3.E.1** Personality, Income and Economic Attitudes Controlling for Education, Religion, and Union Membership (*Danish sample*)

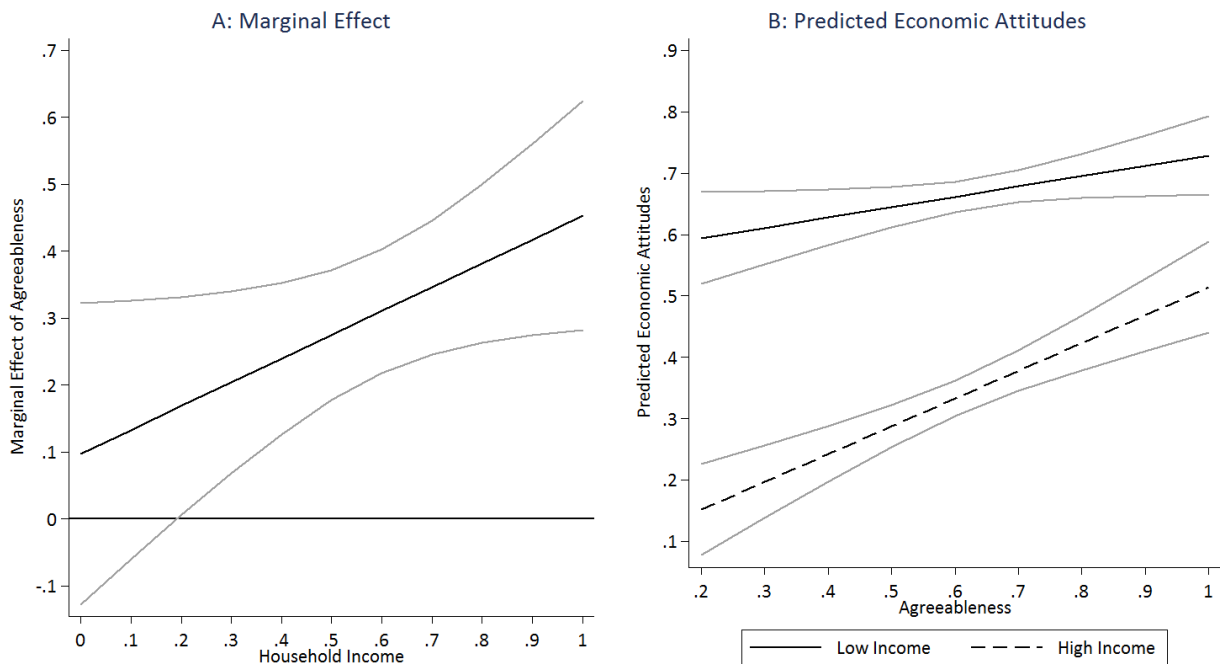
	1	2
Openness	0.13* (0.05)	-0.02 (0.11)
Conscientiousness	-0.18* (0.06)	-0.02 (0.14)
Extraversion	0.00 (0.06)	0.18 (0.13)
Agreeableness	0.32* (0.05)	0.11 (0.11)
Neuroticism	0.28* (0.06)	0.23 (0.14)
Income		-0.47 (0.28)
Female	-0.00 (0.01)	-0.00 (0.01)
Age	0.01* (0.00)	0.03* (0.00)
Age <sup>2</sup> /100	-0.01 (0.00)	-0.02* (0.00)
Ethnicity (Ref. Danish)		
Mixed	-0.07* (0.03)	-0.10* (0.03)
Non-Danish	0.04 (0.06)	0.00 (0.05)
Public sector employee	0.10* (0.01)	0.08* (0.01)
Personality X Income		
Openness X Income		0.26 (0.19)
Conscientiousness X Income		-0.22 (0.23)
Extraversion X Income		-0.22 (0.22)
Agreeableness X Income		0.33 (0.18)
Neuroticism X Income		-0.02 (0.23)
Education (ref. Primary)		
Vocational education	-0.09* (0.02)	-0.07* (0.02)
Upper secondary education	-0.09* (0.03)	-0.06 (0.03)
Medium-cycle tertiary	-0.15* (0.02)	-0.10* (0.02)
Long-cycle tertiary	-0.17* (0.02)	-0.08* (0.02)
Religiosity (ref. Christian)		
Other	0.19* (0.05)	0.15* (0.05)
Non-religious	0.06* (0.02)	0.05* (0.02)
Union Membership		
(Ref. Never been a member)		
Former member	-0.02 (0.02)	-0.03 (0.02)
Member – not active	0.07* (0.02)	0.06* (0.02)
Member – active	0.13* (0.02)	0.11* (0.02)
Constant	-0.02 (0.12)	-0.19 (0.19)
N	1886	1793
R <sup>2</sup>	0.18	0.26

OLS regression coefficients with robust standard errors are reported in the parentheses. \*  $p < .05$

**Figure 3.E.1** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Conscientiousness are reported in Panel B (*Danish sample*)



**Figure 3.E.2** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Agreeableness are reported in Panel B (*Danish sample*)



## US sample

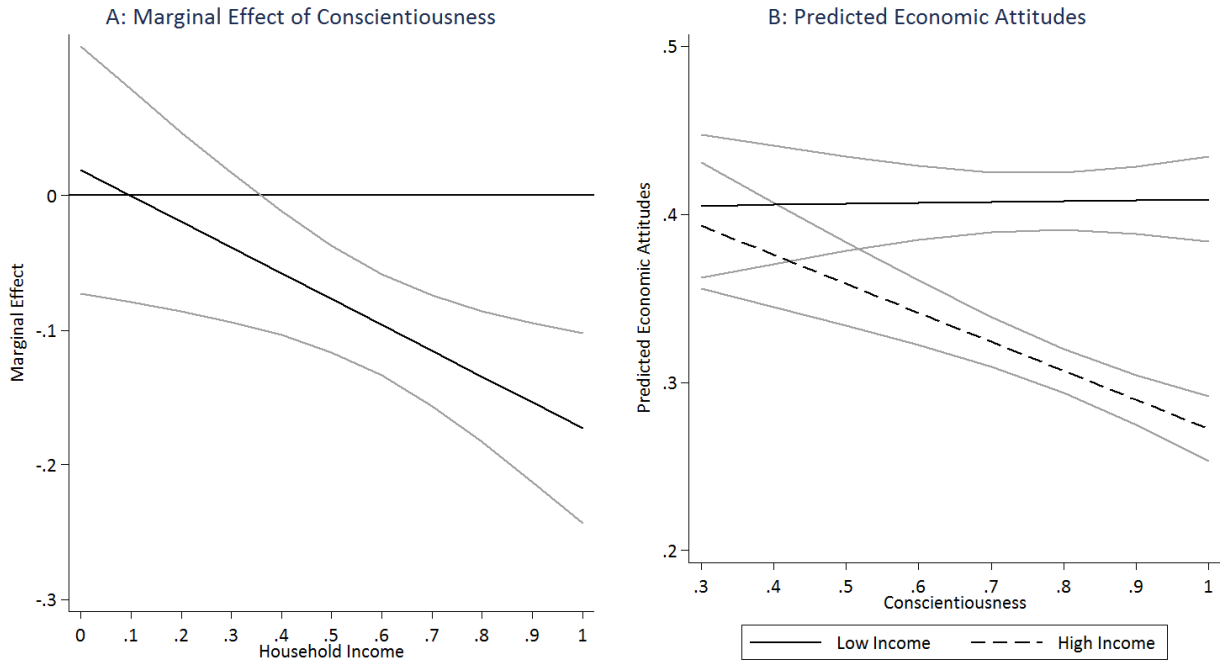
Education is measured in six categories, namely no high school (N = 117; 2.14 %), high school graduate (N = 1,582; 28.99%), some college (N = 1,255; 23.00%), 2 year college (N = 422; 7.93%), 4 year college (N = 1,344; 24.63%) and post graduate (N = 726; 13.30%). Religiosity is measured by a categorical variable which captures Protestant and Catholics (N = 3,429; 63.01%), other religions (N = 694; 12.75% ) and non-believers, atheists and agnostics (N = 1,319; 24.24%). Lastly, union membership was operationalized using three categories, namely: not a member (N = 3,832; 70.43%), former member (N = 1,009; 18.54%) and currently a member (N = 600; 11.03%). The substantive conclusions drawn in this study are robust controlling for religiosity and education (see Table E.2 and Figure E.3-5).

**Table 3.E.2** Personality, Income and Economic Attitudes Controlling for Education, Religion, and Union Membership (*US sample*)

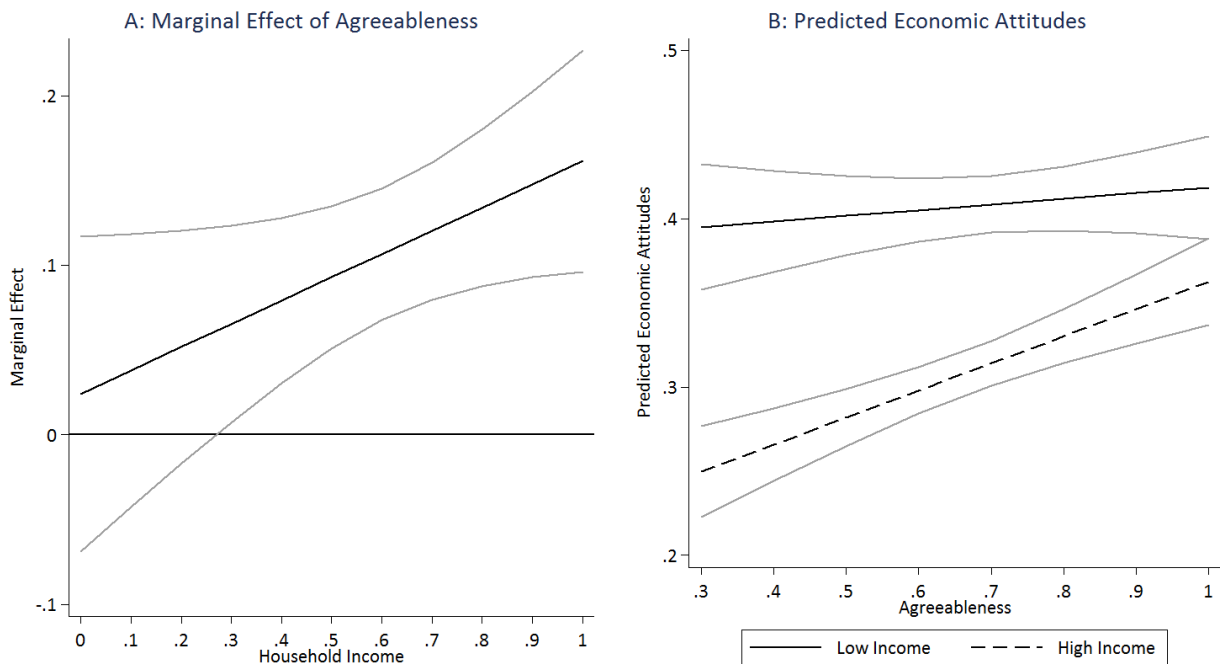
	1	2
Openness	0.08* (0.02)	0.07 (0.05)
Conscientiousness	-0.11* (0.02)	0.02 (0.04)
Extraversion	-0.03* (0.01)	0.03 (0.04)
Agreeableness	0.12* (0.02)	0.03 (0.05)
Neuroticism	0.09* (0.02)	0.05 (0.05)
Income		-0.04 (0.09)
Female	0.06* (0.01)	0.05* (0.01)
Age	-0.01* (0.00)	-0.01* (0.00)
Age <sup>2</sup> /100	0.01* (0.00)	0.01* (0.00)
Ethnicity(ref. White)		
Black	0.11* (0.01)	0.10* (0.01)
Hispanic	0.04* (0.01)	0.04* (0.01)
Other	-0.03* (0.01)	-0.04* (0.01)
Employment Status (ref. Full-Time)		
Part-time	0.01 (0.01)	-0.00 (0.01)
Income X Personality		
Openness X Income		0.03 (0.08)
Conscientiousness X Income		-0.19* (0.07)
Extraversion X Income		-0.08 (0.05)
Agreeableness X Income		0.14* (0.06)
Neuroticism X Income		0.05 (0.07)
Education (ref. No high school)		
High school graduate	0.01 (0.02)	-0.02 (0.01)
Some college	0.01 (0.01)	0.00 (0.01)
2 year college	-0.01 (0.01)	-0.01 (0.01)
College	0.01 (0.01)	0.02 (0.02)
Post graduate	0.06* (0.01)	0.08* (0.02)
Religion (Ref. Protestant or Catholic)		
Other	0.06* (0.01)	0.05* (0.01)
Non-religious	0.08* (0.01)	0.08* (0.01)
Union Membership (Ref. Never been a member)		
Former member	0.02* (0.01)	0.02* (0.01)
Member	0.05* (0.01)	0.08* (0.01)
Constant	0.42* (0.04)	0.44* (0.05)
N	5428	5082
R <sup>2</sup>	0.12	0.13

OLS regression coefficients with robust standard errors and state fixed effects (not shown in the table) are reported in the parentheses. \*  $p < .05$

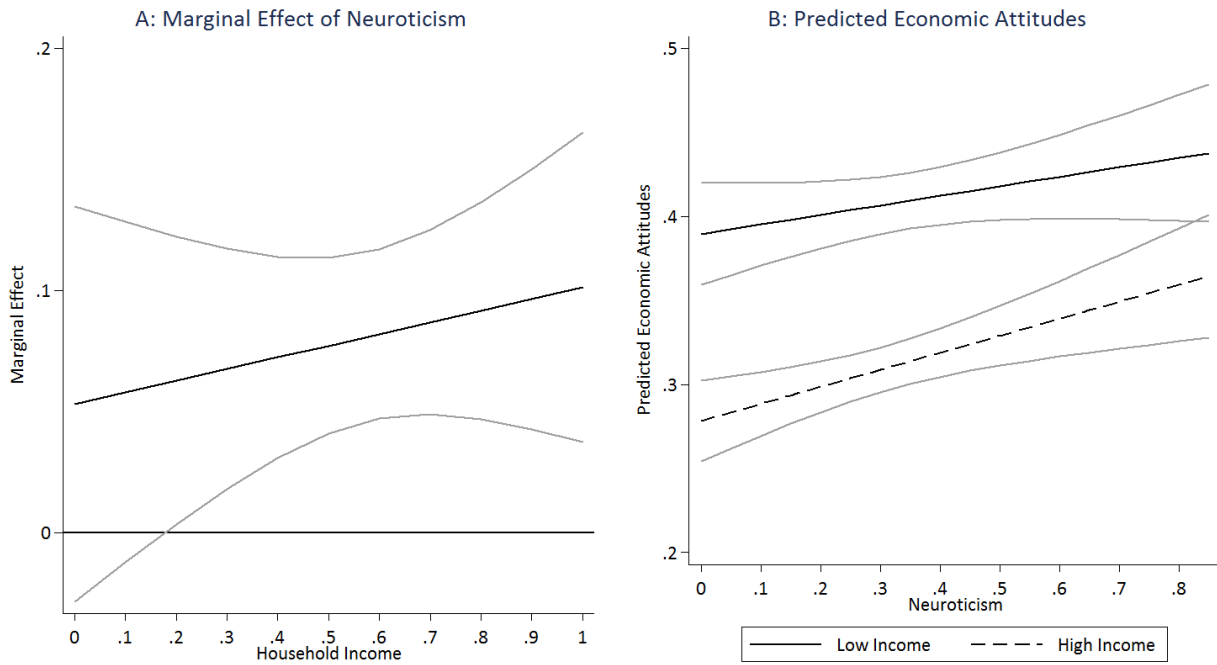
**Figure 3.E.3** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Conscientiousness are reported in Panel B (*US sample*)



**Figure 3.E.4** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Agreeableness are reported in Panel B (*US sample*)



**Figure 3.E.5** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Neuroticism are reported in Panel B (*US sample*)



### 3. F – Personal Income and Social Class Models in Danish sample

The Danish sample includes a measure of personal income and a measure of social class. I arrive at substantively similar conclusions when I test my hypotheses using personal income or social class.

#### Personal income

Personal income is scored in eight categories ranging from “up to 99,999 kroner” through “1,000,000 kroner or more” and was recoded to range from the lowest observed income level (0) through the highest (1) and had a relatively normal distribution ( $M = .45$ ;  $SD = .19$ ). In Table 3.F.1 I include income in the model. In model 1, Table 3.F.1, I test the hypotheses formulated in this study. As can be seen in Figure 3.F.1 the low income earners (5<sup>th</sup> percentile) general have liberal economic attitudes. High income earners with low levels of conscientiousness general have liberal economic attitudes (.49 [95% CI = .39, .60]) compared to their high conscientious counterparts (.19 [95% CI = .09, .30]). The results for Agreeableness show a similar pattern. Figure 3.F.2 displays that there is a significant and positive marginal effect among the higher levels of Agreeableness. Panel B of Figure 3.F.2 shows that the low income earners (5<sup>th</sup> percentile) have strong preferences for redistribution unconditional upon their level of Agreeableness. Among the high income earners (95<sup>th</sup> percentile), the low agreeable (.12 [95% CI = .05, .20]) have more conservative economic attitudes compared to the high agreeable (.55 [95% CI = .47, .63]).

Income does not moderate the association between openness and economic attitudes. Calculating the predicted economic attitudes at different levels of openness, I observe that the participants low on openness are have somewhat more conservative economic attitudes (.46 [95% CI = .42, .50]) compared to participants who score high on openness (.59 [95% CI = .54, .64]).



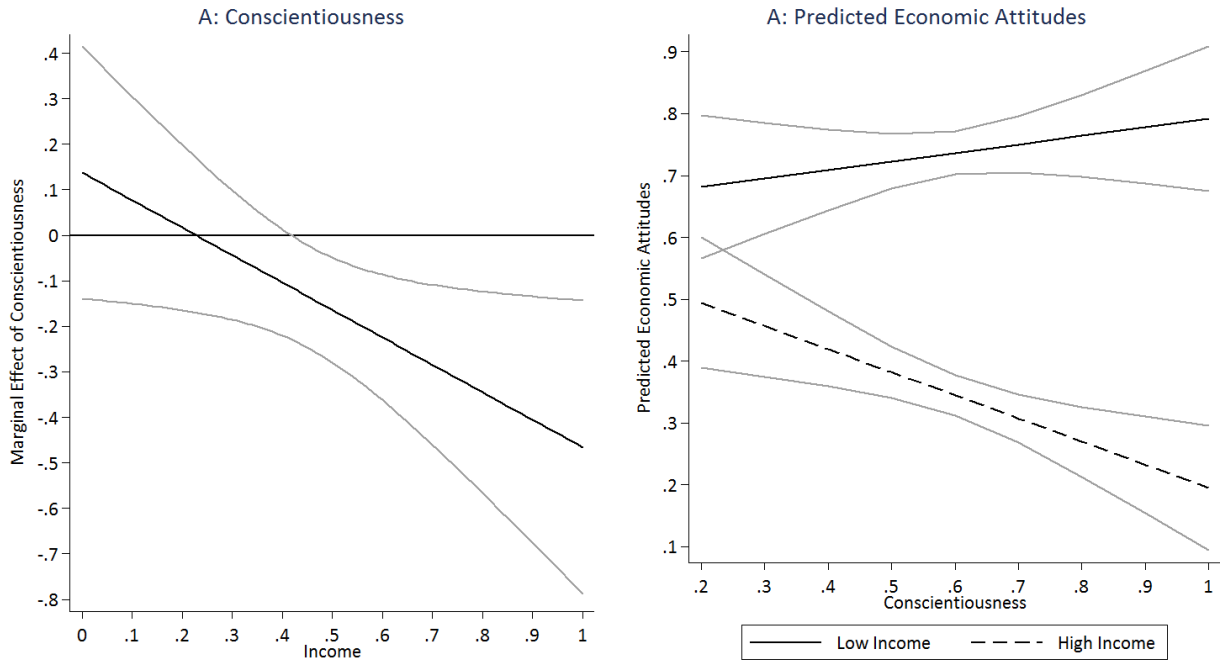
The association between neuroticism and economic attitudes is not moderated by income. Turning to economic attitudes at different levels of neuroticism, I observe that emotionally stable respondents are somewhat more conservative economic attitudes (.44 [95% CI = .39, .49]), whereas the more neurotic counterparts tend to have a modestly liberal economic attitudes (.60 [95% CI = .56, .65]). Again, extraversion is unrelated to economic attitudes. To summarize, the effects of personal income are identical to the effects of household income.

**Table 3.F.1** Personality, Personal Income and Economic Attitudes(*Danish sample*).

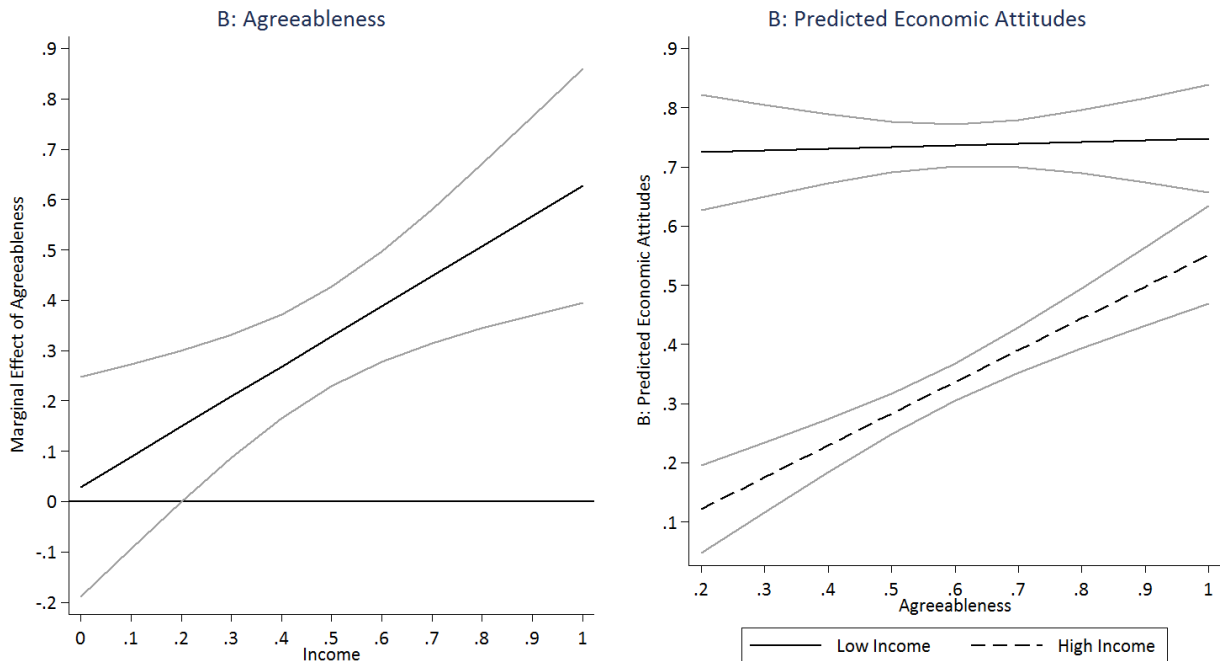
	1
Openness	0.10 (0.11)
Conscientiousness	0.13 (0.14)
Extraversion	0.07 (0.14)
Agreeableness	0.04 (0.11)
Neuroticism	0.22 (0.14)
Personal Income	-0.45 (0.37)
Female	-0.05* (0.01)
Age	0.03* (0.00)
Age <sup>2</sup> /100	-0.03* (0.00)
Ethnicity (Ref. Danish)	
Mixed	-0.07* (0.03)
Non-Danish	-0.01 (0.07)
Public sector employee	0.08* (0.01)
Personality X Income	
Openness X Income	0.10 (0.23)
Conscientiousness X Income	-0.60* (0.28)
Extraversion X Income	-0.06 (0.28)
Agreeableness X Income	0.58* (0.21)
Neuroticism X Income	-0.05 (0.30)
Constant	-0.20 (0.20)
N	1837
R <sup>2</sup>	0.20

OLS regression coefficients with robust standard errors are reported in the parentheses. \*  $p < .05$

**Figure 3.F.1** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Conscientiousness are reported in Panel B (*Danish sample*)



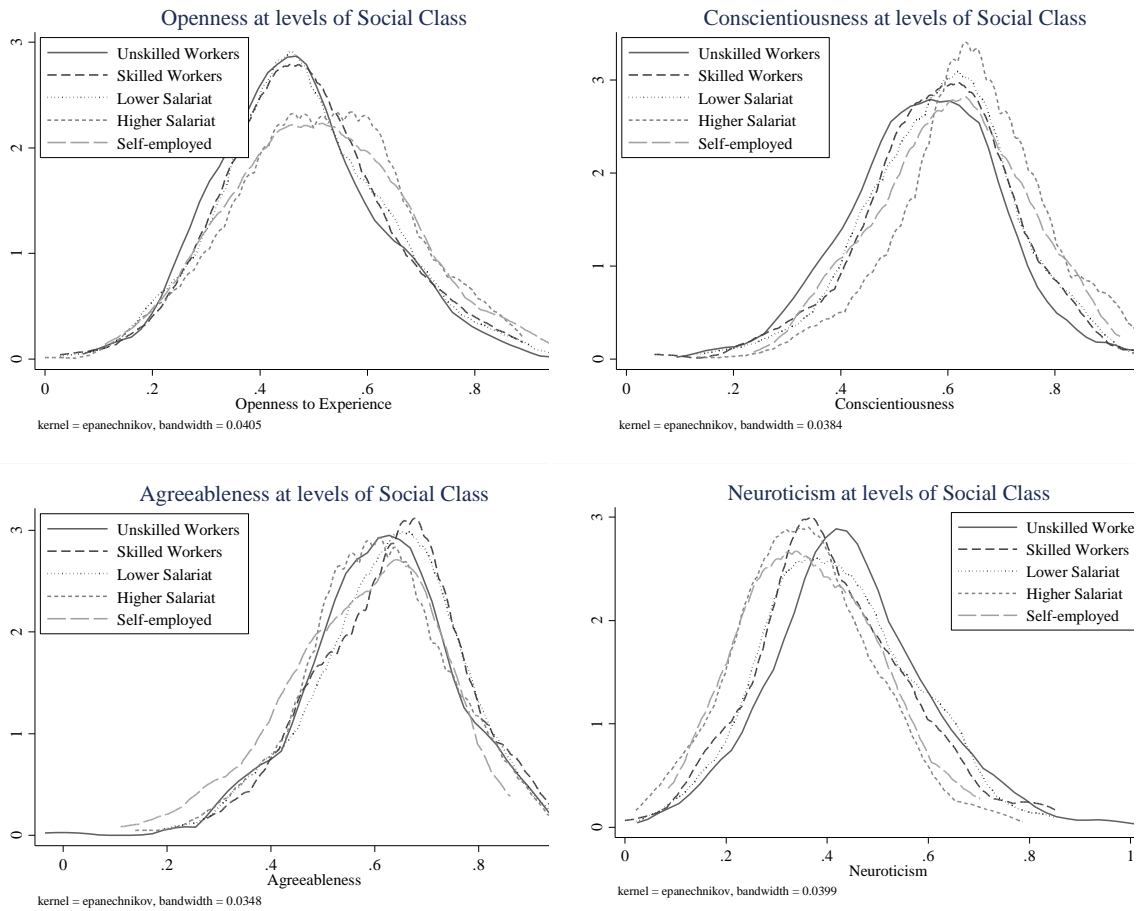
**Figure 3.F.2** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Agreeableness are reported in Panel B (*Danish sample*)



## **Social Class**

I demonstrate that the conclusions in the Danish sample are robust when relying upon an indicator of social class instead of household income. Social class is operationalized in five categories (Erikson, Goldthorpe, & Portocacero, 1979; Stubager, 2010b), namely unskilled manual workers (N = 335; 16.02 %), skilled manual workers (N = 356 ; 17.03%), lower salariat (N = 674; 32.23%), higher salariat (N = 528; 25.25%) and entrepreneurs (N = 198; 9.47%). In order to get better insight in the association between personality traits and social class, I have created kernel density plots which suggest there is no reason to worry about any bimodality of the personality traits conditional upon social class (see Figure 3.F.3).

**Figure 3.F.3** Kernel Density Plots of Personality Traits at different levels of Social Class



In Table 3.F.2 I present the results of the models when household income is substituted for an indicator of social class. Model 1 presents the interactive models. Starting with Conscientiousness, panel A of Figure 3.F.4 shows among the working class there is no association between Conscientiousness and economic attitudes (skilled manual workers are excluded for presentational reasons – available upon request). Only among the higher salariat there is an association between conscientiousness and economic attitudes. Specifically, low scorers on Conscientiousness tend to have more liberal economic attitudes (.52 [95% CI = .43, .60]) than high scorers on Conscientiousness (.35 [95% CI = .27, .43]).

Turning to Agreeableness, panel B of Figure 3.F.4 displays there are no mean differences in economic attitudes between the unskilled workers at different levels of Agreeableness. Among the

lower salariat a different pattern emerges, low agreeable members of the lower salariat have more conservative economic attitudes (.42 [95% CI = .35, .50]) than their high agreeable counterparts (.63 [95% CI = .56, .71]). This effect is even stronger among the higher salariat, whereby low agreeable have more conservative economic attitudes (.21 [95% CI = .14, .29]), whereas the high agreeable are supportive of redistribution (.64 [95% CI = .56, .71]).

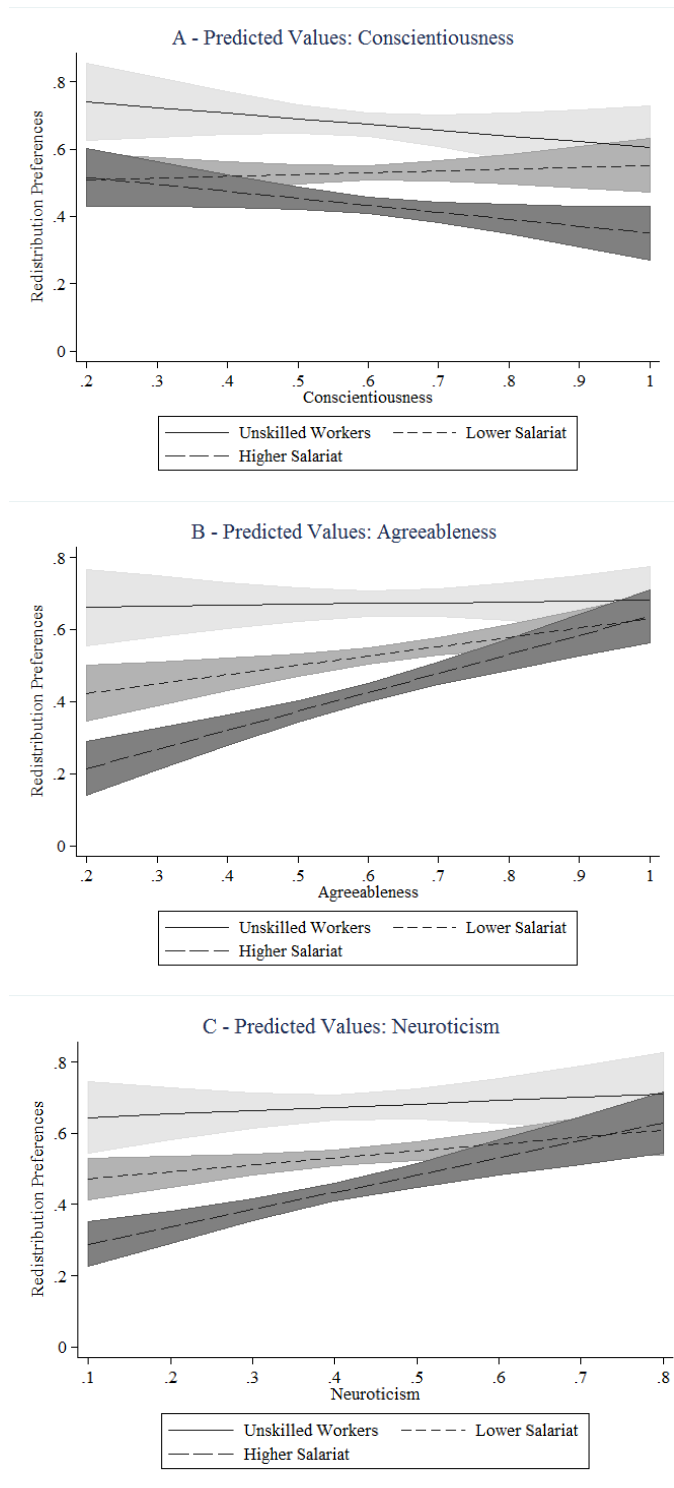
As can be seen in panel C, Figure F.4, Neuroticism is unrelated to economic attitudes among the unskilled workers. Among the lower salariat, the high scorers on Neuroticism have more liberal economic attitudes (.61 [95% CI = .54, .68]) than the low scorers on Neuroticism (.47 [95% CI = .41, .53]). Turning to the higher salariat, I see that neuroticism is strongly associated with economic attitudes. Low neurotic members of the higher salariat have conservative economic attitudes (.29 [95% CI = .23, .35]), whereas the more neurotic the members of the higher salariat have liberal economic attitudes (.63 [95% CI = .54, .71]).

**Table 3.F.2** Personality, Social Class and Economic Attitudes (*Danish sample*)

	1	
Openness	.03	(.14)
Conscientiousness	-.17	(.15)
Extraversion	.11	(.14)
Agreeableness	.03	(.12)
Neuroticism	.09	(.15)
Social Class (Ref = Unskilled Manual)		
Skilled Manual	-.39	(.23)
Lower Salariat	-.55*	(.20)
Higher Salariat	-.76*	(.21)
Entrepreneurs	-.13	(.30)
Female	-.03*	(.01)
Age	.01*	(.00)
Age <sup>2</sup> /100	-.01*	(.00)
Ethnicity (Ref. Danish)		
Mixed	-.06*	(.03)
Non-Danish	.04	(.06)
Public sector employee	.08*	(.01)
Openness X Social Class		
Openness X Skilled Manual	.13	(.18)
Openness X Lower Salariat	.27	(.16)
Openness X Higher Salariat	.05	(.16)
Openness X Entrepreneurs	.02	(.20)
Conscientiousness X Social Class		
Conscientiousness X Skilled Manual	.19	(.20)
Conscientiousness X Lower Salariat	.22	(.17)
Conscientiousness X Higher Salariat	-.03	(.18)
Conscientiousness X Entrepreneurs	-.37	(.25)
Extraversion X Social Class		
Extraversion X Skilled Manual	-.10	(.20)
Extraversion X Lower Salariat	-.09	(.17)
Extraversion X Higher Salariat	.09	(.18)
Extraversion X Entrepreneurs	-.12	(.23)
Agreeableness X Social Class		
Agreeableness X Skilled Manual	.25	(.17)
Agreeableness X Lower Salariat	.23	(.15)
Agreeableness X Higher Salariat	.49*	(.15)
Agreeableness X Entrepreneurs	.12	(.19)
Neuroticism X Social class		
Neuroticism X Skilled Manual	.15	(.20)
Neuroticism X Lower Salariat	.11	(.17)
Neuroticism X Higher Salariat	.40*	(.18)
Neuroticism X Entrepreneurs	.09	(.26)
Constant	.24	(.20)
N	1905	
R <sup>2</sup>	.23	

OLS regression coefficients with robust standard errors are reported in the parentheses. \*  $p < .05$

**Figure 3.F.4** Predicted Preferences for Redistribution at different levels of Conscientiousness and Agreeableness and Neuroticism at different levels of Social Class (*Danish sample*)



### 3. G – Tobit Models in US sample

As explained in the article, one could argue that a Tobit model is an appropriate model since the dependent variable is censored at the left and right end of the distribution. Table 3.G.1 and the Figures 3.G.1-3 show the substantive conclusions do not change using the Tobit models.

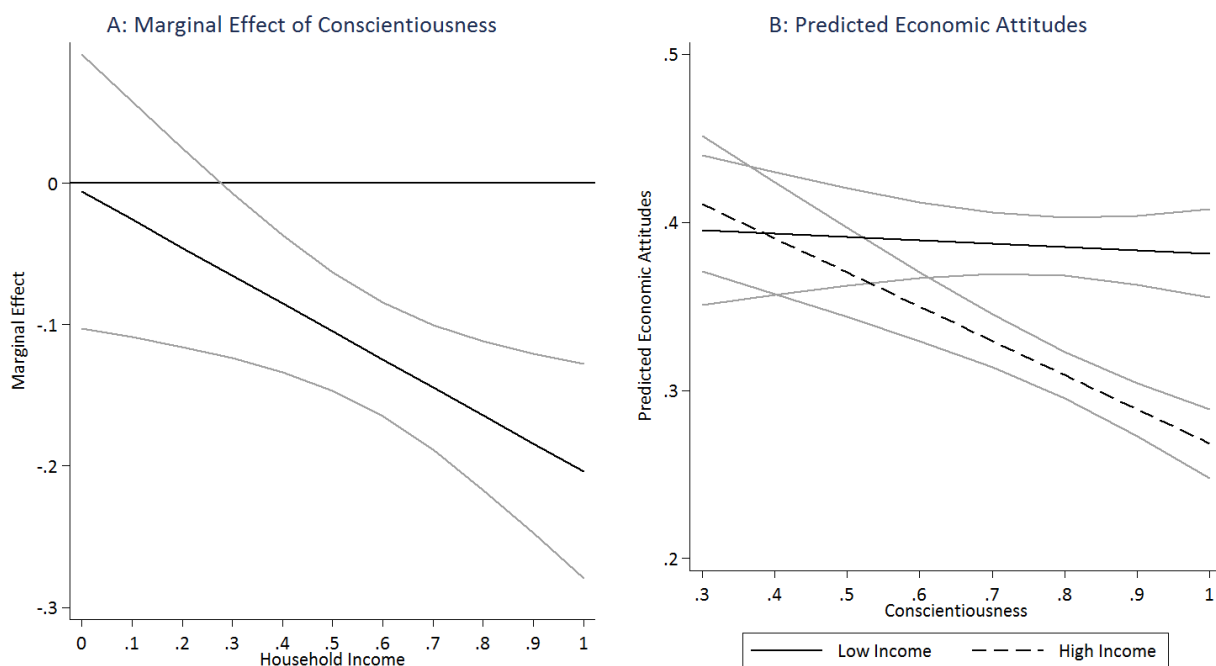
**Table 3.G.1** Personality, Income and Economic Attitudes using Tobit models (*US sample*)

	1	2
Openness	0.11* (0.02)	0.08 (0.05)
Conscientiousness	-0.13* (0.02)	-0.00 (0.05)
Extraversion	-0.04* (0.01)	0.02 (0.04)
Agreeableness	0.11* (0.02)	0.01 (0.05)
Neuroticism	0.10* (0.02)	0.07 (0.04)
Income		-0.04 (0.10)
Female	0.06* (0.01)	0.06* (0.01)
Age	-0.01* (0.00)	-0.01* (0.00)
Age <sup>2</sup> /100	0.01* (0.00)	0.01* (0.00)
Ethnicity(ref. White)		
Black	0.12* (0.01)	0.11* (0.01)
Hispanic	0.04* (0.01)	0.04* (0.02)
Other	-0.03* (0.02)	-0.04 (0.02)
Employment Status (ref. Full-Time)		
Part-time	0.00 (0.01)	-0.00 (0.01)
Income X Personality		
Income X Openness		0.07 (0.08)
Income X Conscientiousness		-0.20* (0.08)
Income X Extraversion		-0.08 (0.06)
Income X Agreeableness		0.15* (0.08)
Income X Neuroticism		0.02 (0.07)
Constant	0.50* (0.04)	0.50* (0.06)
N	5457	5109
Pseudo R <sup>2</sup>	.30	0.32
Log pseudolikelihood	-590	-525

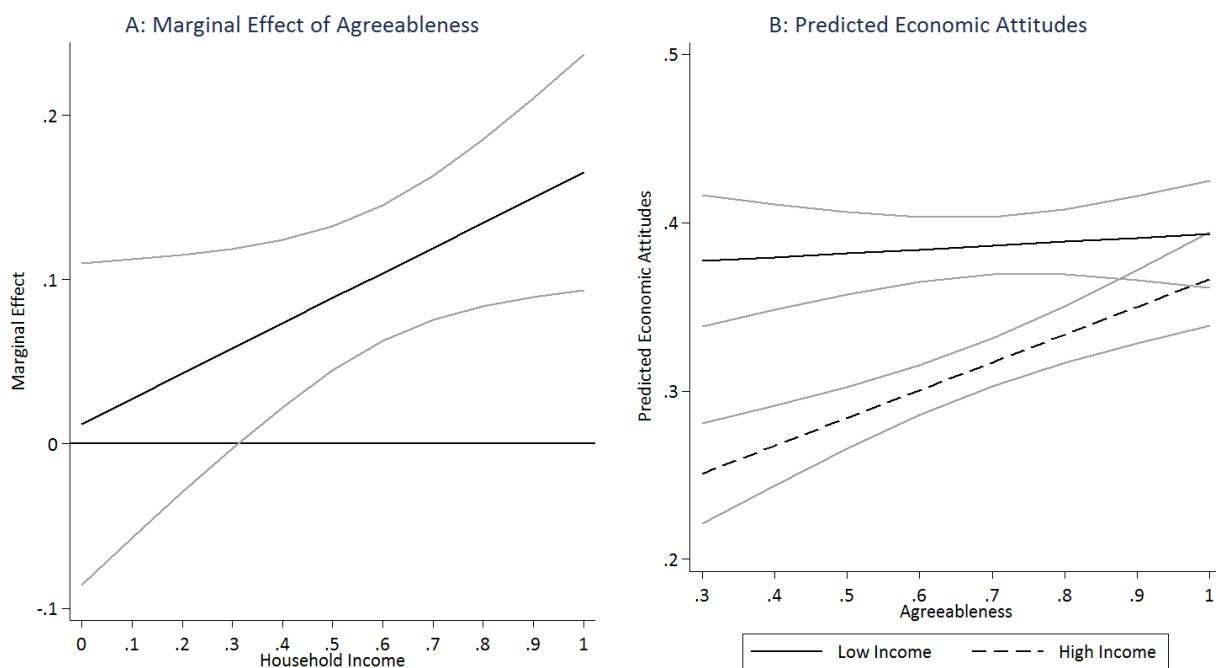
Note: Table entries are weighted Tobit regression coefficients with state fixed effects (not shown in the table) with robust standard errors in brackets. The dependent variable consists of 346 left-censored observations and 16 right-censored observations. \* $p < .05$  (two-tailed).



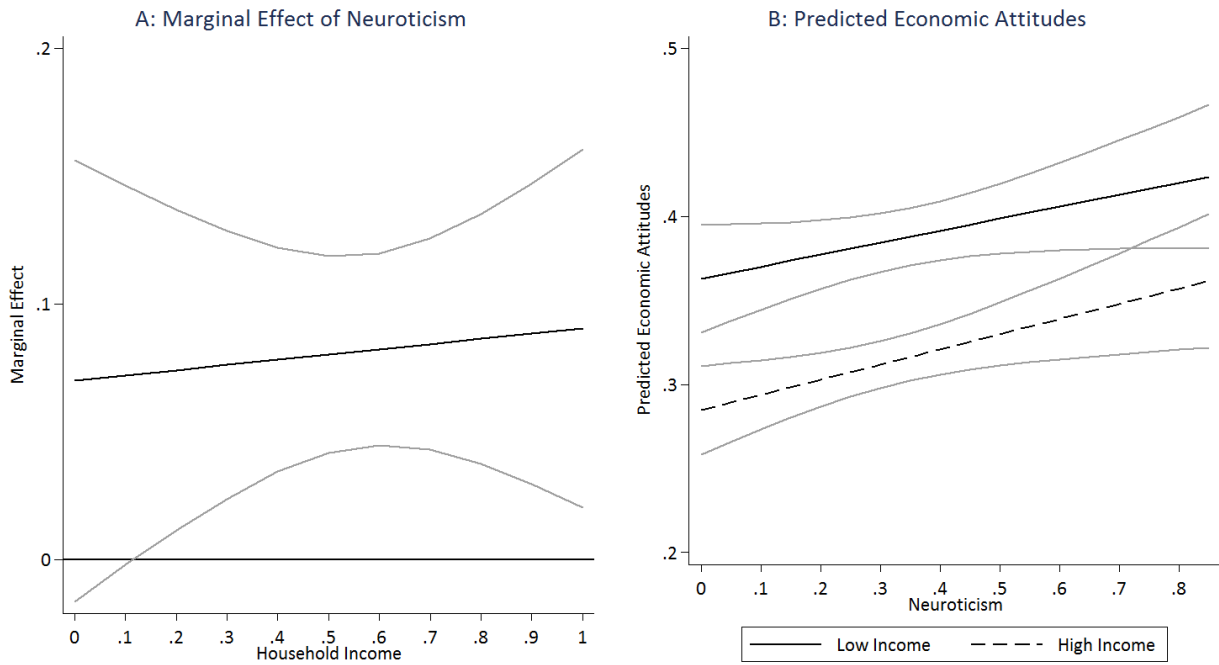
**Figure 3.G.1** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Conscientiousness are reported in Panel B (*US sample*)



**Figure 3.G.2** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Agreeableness are reported in Panel B (*US sample*)



**Figure 3.G.3** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Neuroticism are reported in Panel B (*US sample*)



### **3. H – Race X Personality Traits Interactions**

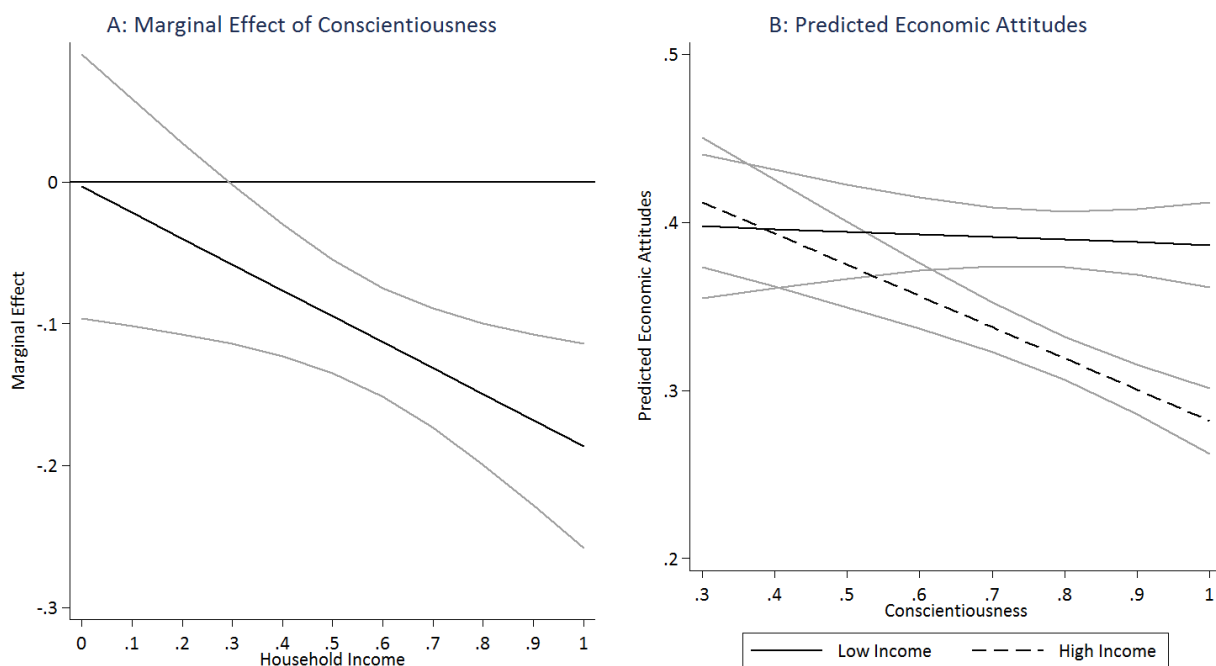
Gerber et al (2010) showed that the effects of personality traits on political attitudes in the US are conditioned by race. I show in this study that the results of my study are robust controlling for the conditional effects of race in the US sample (see Table 3.H.1 and 3.H.1-3).

**Table 3.H.1** Personality, Income and Economic Attitudes Controlling for the Interaction between Race and Personality (*US sample*)

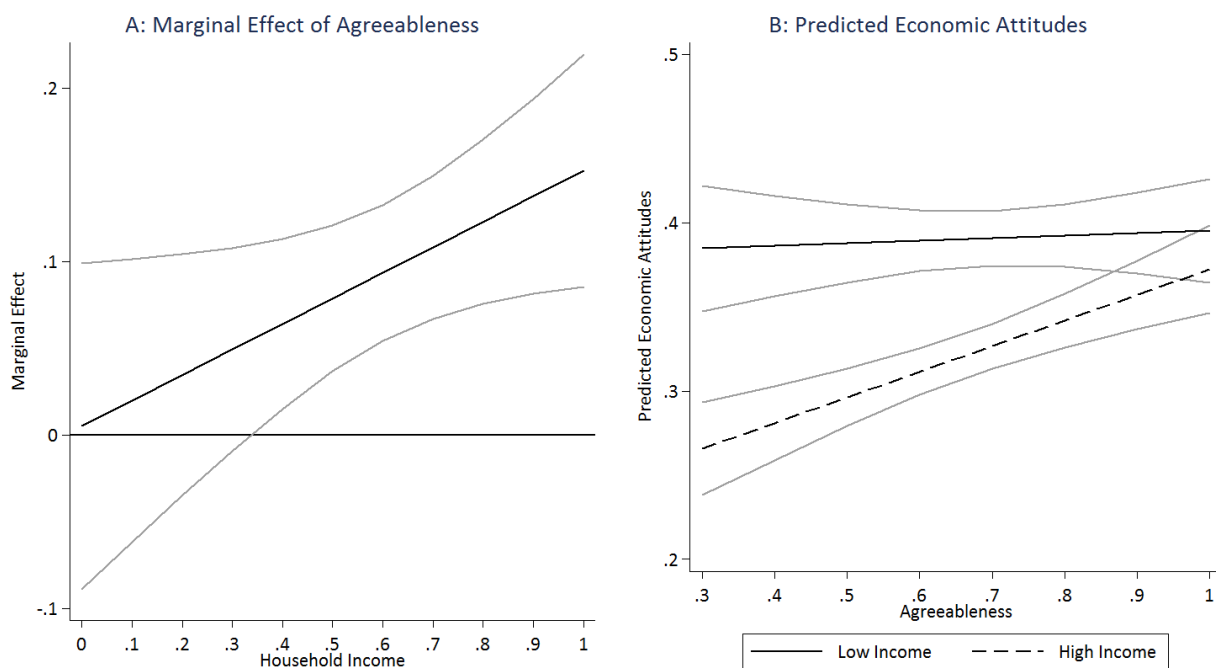
	Model 1	
Openness	0.12*	(0.05)
Conscientiousness	-0.01	(0.05)
Extraversion	0.00	(0.04)
Agreeableness	0.02	(0.05)
Neuroticism	0.08	(0.04)
Income	-0.03	(0.09)
Female	0.05	(0.01)
Age	-0.01*	(0.00)
Age <sup>2</sup> /100	0.01*	(0.00)
Ethnicity(ref. White)		
Black	0.19*	(0.08)
Hispanic	0.15	(0.08)
Other	-0.03	(0.09)
Employment Status (ref. Full-Time)		
Part-time	-0.01	(0.01)
Income X Personality		
Openness X Income	0.04	(0.07)
Conscientiousness X Income	-0.18*	(0.07)
Extraversion X Income	-0.07	(0.06)
Agreeableness X Income	0.15*	(0.07)
Neuroticism X Income	0.01	(0.07)
Ethnicity X Personality		
Black X Openness	-0.22	(0.06)
Black X Conscientiousness	0.09	(0.07)
Black X Extraversion	0.09	(0.05)
Black X Agreeableness	-0.02	(0.06)
Black X Neuroticism	-0.12*	(0.05)
Hispanic X Openness	-0.02	(0.06)
Hispanic X Conscientiousness	-0.02	(0.06)
Hispanic X Extraversion	0.03	(0.05)
Hispanic X Agreeableness	-0.10	(0.06)
Hispanic X Neuroticism	-0.11	(0.06)
Other X Openness	-0.06	(0.07)
Other X Conscientiousness	0.02	(0.07)
Other X Extraversion	0.02	(0.06)
Other X Agreeableness	-0.04	(0.07)
Other X Neuroticism	0.11	(0.08)
State Fixed Effects	Yes	
Constant	.47*	(.05)
N	5109	
R <sup>2</sup>	.10	

OLS regression coefficients with robust standard errors and state fixed effects (not shown in the table) are reported in the parentheses. \*  $p < .05$

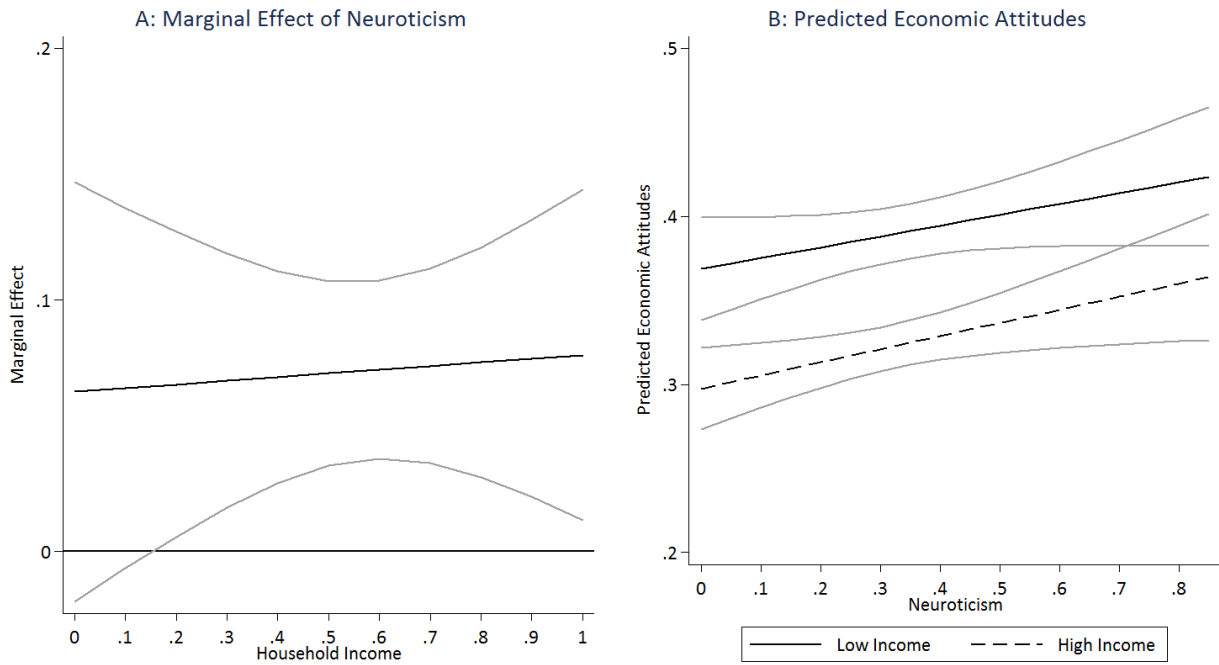
**Figure 3.H.1** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Conscientiousness are reported in Panel B (*US sample*)



**Figure 3.H.2** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Agreeableness are reported in Panel B (*US sample*)



**Figure 3.H.3** Marginal Effect of Neuroticism on Economic Attitudes at different levels of Income are reported in Panel A. Predicted Economic Attitudes among the Low and High Income Earners at different levels of Neuroticism are reported in Panel B (*US sample*)



### **3. I – Mediation Analyses**

An alternative explanation is that the effects of personality traits are mediated through income. I rely upon the “sgmediation” function in STATA 12, and I will discuss the results below.

#### **Danish sample**

In model 1 I present the mediator serves as the dependent variable. In the second column of Table 3.1.1, I confirm that conscientiousness and extraversion are positively associated with a higher income, while agreeableness and neuroticism are associated with a lower income. Moreover, openness is not related to income. The second column of Table 3.1.1 presents the indirect effects. As expected the indirect effect of conscientiousness is negative (-.07) and significant. This suggests that higher levels of conscientiousness lead to a higher income which leads to opposition towards redistribution. Similarly, high agreeableness and neuroticism lead to lower income and a stronger preference of economic attitudes. These analyses confirm that some of the effect of personality is mediated through income but the results also suggest that the indirect effects are considerably smaller than the direct effects.

**Table 3.I.1** Personality, Household Income and Economic Attitudes (*Danish sample*)

	Income	Indirect effects
Openness	0.06 (0.04)	-0.03 (0.02)
Conscientiousness	0.16* (0.04)	-0.07* (0.02)
Extraversion	0.13* (0.04)	-0.06* (0.02)
Agreeableness	-0.12* (0.04)	0.05* (0.02)
Neuroticism	-0.15* (0.05)	0.07* (0.02)
Female	0.00 (0.01)	
Age	0.03* (0.00)	
Age2/100	-0.03* (0.00)	
Ethnicity (Ref. Danish)		
Mixed	-0.01 (0.03)	
Non-Danish	-0.05 (0.05)	
Public sector employee	-0.04* (0.01)	
Constant	0.32* (0.09)	
N	1808	
R <sup>2</sup>	0.12	

Standard errors are reported in the parentheses. The standard errors for the mediation coefficients are bootstrapped standard errors. \*  $p < .05$



## US sample

The results of the US sample confirm the findings in the Danish sample (see Table 3.1.2). Conscientiousness and Extraversion are positively related to higher levels of income, whereas agreeableness and neuroticism are related to lower levels of income. Calculation of the indirect effects suggests that some of the effects of these four traits on economic attitudes are mediated by income but the effect is relatively small.

**Table 3.1.2** Personality, Income and Economic Attitudes (*Danish sample*)

	Income	Indirect effects
Openness	0.04 (0.02)	-0.00* (0.00)
Conscientiousness	0.09* (0.02)	-0.01* (0.01)
Extraversion	0.10* (0.01)	-0.01* (0.01)
Agreeableness	-0.11* (0.02)	0.01* (0.00)
Neuroticism	-0.11* (0.01)	0.01* (0.01)
Female	-0.04* (0.01)	
Age	0.02* (0.00)	
Age <sup>2</sup> /100	-0.01* (0.00)	
Ethnicity(ref. White)		
Black	-0.05* (0.01)	
Hispanic	0.01 (0.01)	
Other	-0.01 (0.01)	
Employment Status (ref. Full-Time)		
Part-time	-0.13* (0.01)	
Constant	0.31* (0.05)	
N	5109	
R <sup>2</sup>	0.16	

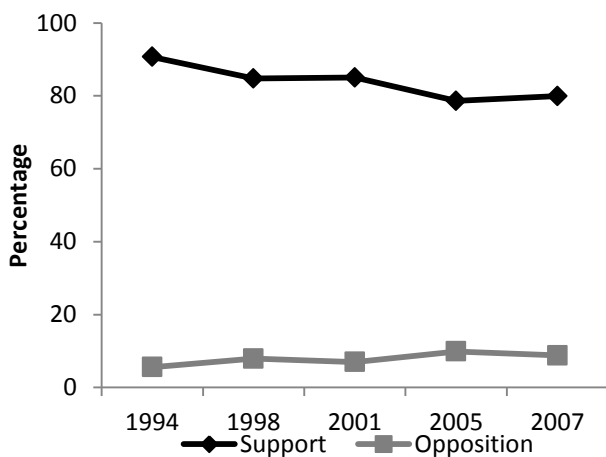
Standard errors are reported in the parentheses. The standard errors for the mediation coefficients are bootstrapped standard errors. \*  $p < .05$

## Supplementary Material Chapter 4

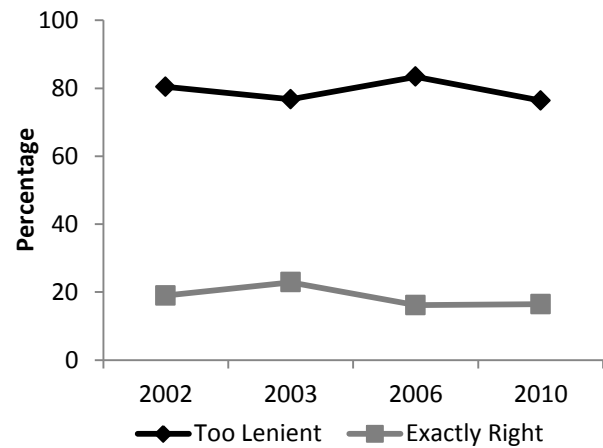
### 4. A – Punitive Attitudes in Denmark and the Netherlands

**Figure 4.A. 1** Punitive Attitudes over Time in Denmark and the Netherlands

*Denmark.* Support and Opposition for Harsher Punishment of Violent Crimes



*The Netherlands.* Extent to which Crimes are Punished too Lenient or Just Right



Denmark: Support and Opposition for the Harsher Punishment of Violent Crimes, whereby “totally agree” and “almost agree” are grouped into the category support, whereas “disagree” and “almost disagree” are grouped into opposition. Respondents answering “neutral” are excluded (Source: Danish National Election Studies 1994-2007).

The Netherlands: Attitudes towards the Extent to which Crimes are Punished Too Lenient, or Just Right in The Netherlands. The response category “too harsh” is excluded from the Figure as less than 1 percent of the respondents tended to answer this category across the samples. (Source: Dutch National Election Studies: 2002-2010)

#### 4. B – Descriptive Statistics Framing-experiment

**Table 4.B.1** Descriptive Statistics Sample Framing-experiment

Variable	M	sd	%	N	Min	Max	#Items	Alpha	Year
Punishment of criminals	0.84	0.17		428	0	1	5	0.87	
Openness <sup>a)</sup>	0.55	0.14		413	0	1	10	0.74	2009
Age	49.65	16.24		401	18	89	1		2010
Gender				424					2010
Male			45.28	192					
Female			54.72	232					
Household Income <sup>b)</sup>	4081	2245		400	0	21100			2010
Education				422					2010
Primary school			13.27	56					
Intermediate Secondary			27.96	118					
Higher secondary			10.66	45					
Intermediate vocational			20.38	86					
Higher vocational			22.51	95					
University			5.21	22					

a. The items of the personality traits were scored on five-point Likert scale, ranging from “strongly agree” through “strongly disagree”. The created scales were recoded to range from the lowest observed value (0) to the highest observed value (1).

b. Measured in gross household income per month in Euros.

**Table 4.B.2** Item wording Punitive Attitudes

---

#	Wording
1	To make society safer, offenders should be incarcerated rather than out on the streets.
2	It is better to incarcerate persistent offenders for longer periods since this will prevent future crimes from taking place.
3	In order to deter potential offenders, heavier sentences should be imposed in the Netherlands.
4	To ensure the safety of citizens, perpetrators of serious crimes should be incarcerated as long as possible.
5	Unless the perpetrator of a serious crime receives an unconditional prison sentence, he will continue to pose a threat to society.

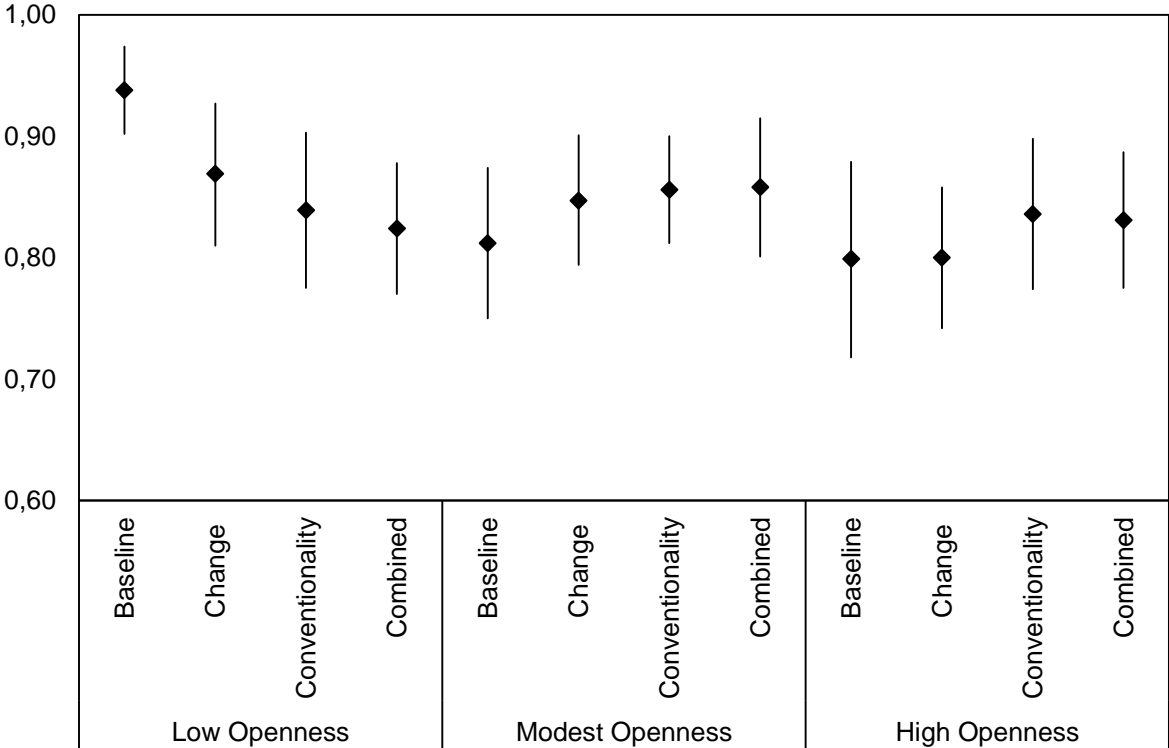
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**Table 4.B.3** Item wording Openness to Experience

#	Wording
1	Have excellent ideas.
2	Am quick to understand things.
3	Have difficulty understanding abstract ideas. (R)
4	Am not interested in abstract ideas. (R)
5	Am full of ideas.
6	Have a rich vocabulary.
7	Use difficult words.
8	Have a vivid imagination.
9	Spend time reflecting on things.
10	Do not have a good imagination. (R)

4. C – Additional Information LISS panel

Figure 4.C.1 Expressed Punitive Attitudes Including the Middle Group of Openness



#### 4. D – Descriptive Statistics Counterargument Experiment

**Table 4.D.1** Descriptive Statistics Counterargument Experiment

Variable	M	sd	%	N	Min	Max	#Items	Alpha	r
Openness	0.47	0.15		2289	0	1	10	0.73	
Openness to Ideas	0.56	0.24		2289	0	1	2	0.65	0.48
Gender									
Male			49.24	1127					
Female			50.77	1162					
Age	53.99	16.62		2290	18	92			
Household Income <sup>a)</sup>	0.31	0.20		2030	0	1			
Education				2289					
Primary school			32.98	755					
Vocational			38.01	870					
Upper secondary			7.08	160					
Professional			13.19	302					
Bachelor or higher			8.74	200					

a. Household income is measured in total Danish Kroner per year before taxes and scored in 15 categories ranging from less than 99,999 Danish Kroner through more than 2,000,000 Danish Kroner. I recoded the scale to range from the lowest (0) through the highest (1) income categories.

**Table 4.D.2** Agreement with “harsher punishment of violent crimes” at T<sub>1</sub>

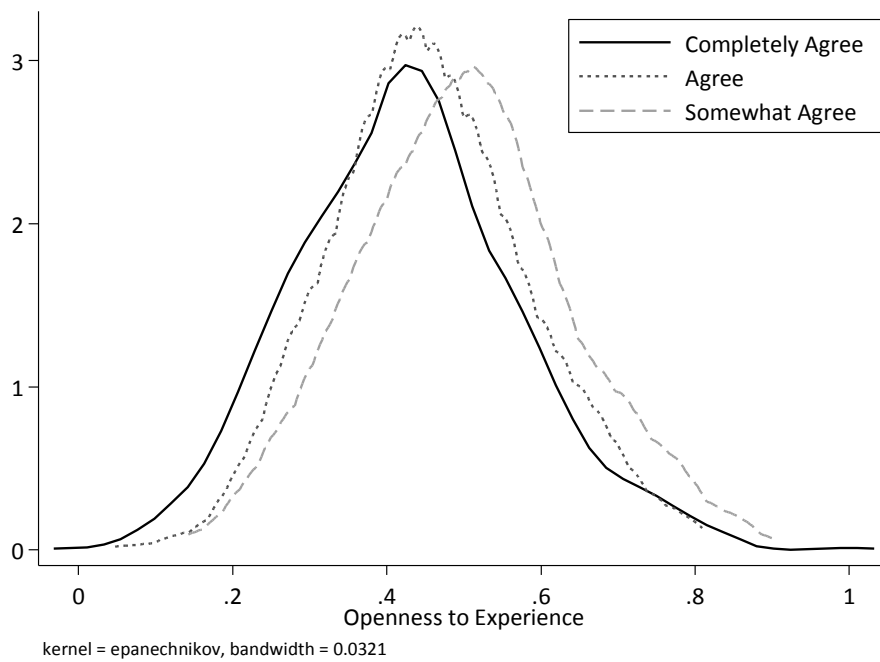
Responses T <sub>1</sub>	%	N
Completely Agree	42.51	97
Agree	23.37	535
Somewhat Agree	15.81	362
Neither Agree nor Disagree	7.73	177
Somewhat Disagree	4.54	104
Disagree	4.11	94
Completely Disagree	1.92	44



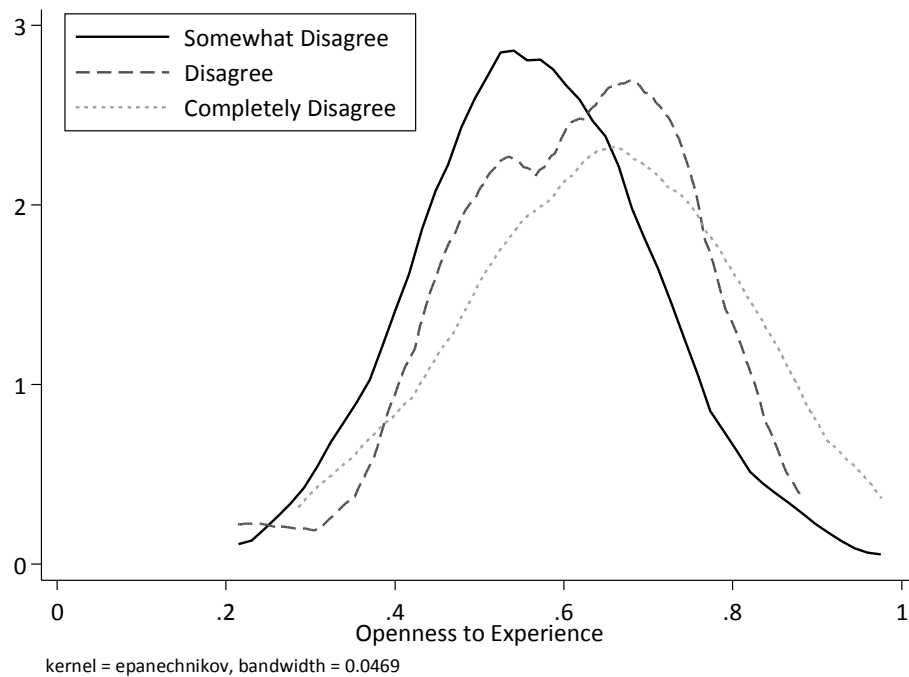
**Table 4.D.3** Item Wording Openness to Experience

Facet	Item Wording
Fantasy	I have a lively fantasy. I enjoy concentrating on a fantasy or a daydream and let it grow.
Actions	Poetry does not tell me much. Sometimes when I read a poem or looking at art, I feel a puff of pitch.
Aesthetics	I rarely experience strong emotions. It is the strangest thing - such as special scents or the names of distant places.
Feelings	I often try new and unfamiliar food. I find myself better in familiar surroundings.
Ideas	I think that philosophical discussions are boring. I have little interest in speculating over the universe mysteries or man.
Values	I think that controversial speakers only serve to confuse. I think that other people's perception of what is right and wrong, can differ.

**Figure 4.D.1** Distribution Openness among Participants that Agreed with Harsh Punishment



**Figure 4.D.2** Distribution Openness among Participants that Disagreed with Harsh Punishment



#### 4. E – Controlling for Conscientiousness

The survey also consisted of a 12-item Conscientiousness measure ( $M=0.55$ ,  $SD=0.16$ ,  $\alpha= 0.73$ ) that was taken from the 60 item NEO PI-R Short Version (Skovdahl-Hansen et al., 2004). In two sets of explorative analyses, I also tested whether Conscientiousness would moderate the persuasiveness in this experiment. As can be seen in Table 4.E.1, the effects of the persuasive argument do not depend on the Conscientiousness of the participant. However, and more importantly, I test the robustness of my results for Openness to Experience and Openness to Ideas. In model 2, I both interact Openness with the treatment as well as Conscientiousness, however, and following recent literature on interaction terms, I also include all consecutive interaction terms (Brambor et al., 2006; Braumoeller, 2004; Kam & Franzese, 2007). In order to interpret these multiplicative interaction models, I again calculate the marginal effect of the rehabilitation argument compared to the cost counterargument over the range of the independent variables. The results for Openness (model 2) again confirm that Openness does not moderate the persuasiveness.

Turning to Openness to Ideas in model 3, I again confirm Openness to Ideas is a moderator of the effect of the treatment. As can be seen in Figure F.1, the marginal effect of the rehabilitation counterargument compared to the cost counterargument is significant and positive among the high scorers on Openness to Ideas. Next, I calculate the predicted probabilities among participants low (5<sup>th</sup> percentile) and high (95<sup>th</sup> percentile) on Openness to Ideas to interpret the marginal effect. I expected that high scorers on Openness to Ideas are more persuaded when the counterargument resonates with the motives rooted in Openness. Participants high on Openness to Ideas (95<sup>th</sup> percentile) receiving the *rehabilitation* counterargument (0.57 [95%CI=0.45, 0.69]) changed their attitudes more ( $p < 0.05$ ) towards softer punitive attitudes compared to participants

high on Openness to Ideas receiving a cost counterargument (0.26 [95%CI=0.14, 0.38]). Moreover, I observe that participants low on Openness in the *cost*-counterargument (0.40 [95%CI=0.30, 0.51]) and the *rehabilitation* counterargument (0.41 [95%CI=0.30, 0.52]) do not differ from each other in the predicted changes in attitudes. The results thereby confirm the expectation that participants are more persuaded to express softer punitive attitudes when the content of the message resonates with the motives rooted in a trait. The same limitation, however, apply as discussed in the main text. Given the consistent non-findings among participants who initially opposed the harsh punishment of violent crimes, I do not test the robustness among participants who initially opposed harsh punishment of violent crimes.

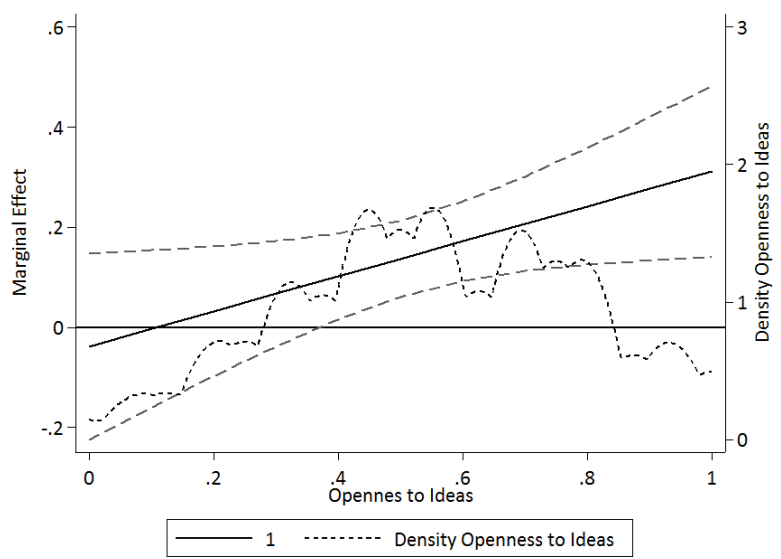
**Table 4.E.1** OLS Regression Model Testing the Expectation that Participants Change Attitudes Receiving a Counterargument which Resonates with the Motives Rooted in Openness.

	1	2	3
<i>Rehabilitation</i> counterargument (ref. <i>Cost</i> counterargument)	0.09 (0.14)	-0.23 (0.44)	-0.27 (0.32)
Conscientiousness	-0.26 (0.17)	-0.93 (0.52)	-0.99* (0.04)
Openness to Experience	-	0.70 (0.66)	-
Openness to Ideas	-	-	0.97* (0.39)
Rehabilitation X Conscientiousness	0.09 (0.24)	0.70 (0.74)	-0.78 (0.94)
Rehabilitation X Openness	-	-0.69 (0.94)	-
Rehabilitation X Openness to Ideas	-	-	0.78 (0.56)
Openness X Conscientiousness	-	1.45 (1.10)	-
Openness to Ideas X Conscientiousness	-	-	1.45* (0.66)
Rehabilitation X Openness X Conscientiousness	-	-1.34 (1.53)	-
Rehabilitation X Openness to Ideas X Conscientiousness	-	-	-0.78 (0.94)
Constant	0.49* (0.10)	0.63* (0.23)	0.97* (0.22)
N	1870	1870	1870
R <sup>2</sup>	0.01	0.01	0.01

Standard errors reported in the parentheses. All variables included in the model range from 0 to 1.

\* $p < 0.05$

**Figure 4.E.1** Marginal Effect of the Rehabilitation Counterargument on Changes in Preferences for Harsh Punishment of Violent Crimes



## Supplementary Material Chapter 5

### 5. A – Sample Characteristics

**Table 5.A.1** Descriptive Statistics

Item	M	SD	%	N	Min	Max	# Items	$\alpha$
Social Attitudes	0.50	0.19		944	0	1	6	0.70
Political Knowledge	0.56	0.21		944	0	1	12	0.65
Age	22.97	1.85		944	19.17	33.31		
Gender								
Male			50.85	480				
Female			49.15	464				

**Table 5.A.2** Item Wording and Factor Loadings of the Social Attitudes Dimension

Item	Item Wording	Factor Loadings
1	Violent crimes should be punished much harder.	0.67
2	We should preserve our national customs in Denmark.	0.67
3	Crime is better prevented with prevention and advice than harsh sentences.	0.64
4	Preserving the environment should not harm business.	0.47
5	Homosexuals should have the same rights as everyone else.	0.66
6	Green taxes on gasoline should be increased.	0.69

Scored: 'Totally agree', 'Somewhat agree', 'Somewhat disagree', 'Totally disagree' 'Don't know'



**Table 5.A.3** Item Wording and Answer Categories of the Political Knowledge Battery

Item	Item Wording	Answers
1	Who is the Danish Prime Minister?	<ol style="list-style-type: none"> <li>1. <b>Helle Thorning-Schmidt</b></li> <li>2. Lars Løkke Rasmussen</li> <li>3. Do not know</li> </ol>
2	We often talk about the executive force. Who do we talk about in this context?	<ol style="list-style-type: none"> <li>1. Minister of Justice</li> <li>2. Police</li> <li>3. <b>Government</b></li> <li>4. Parliament</li> <li>5. I do not know</li> </ol>
3	Which of the following persons is the Danish Finance Minister?	<ol style="list-style-type: none"> <li>1. Claus Hjort Frederiksen</li> <li>2. Anders Fogh Rasmussen</li> <li>3. <b>Bjarne Corydon</b></li> <li>4. Lars Løkke Rasmussen</li> <li>5. Do not want to answer</li> </ol>
4	Does a politician needs to be member of parliament in order to become minister?	<ol style="list-style-type: none"> <li>1. Yes</li> <li>2. <b>No</b></li> <li>3. Do not know</li> </ol>
5	To which party does the politician in this image belong to?	<ol style="list-style-type: none"> <li>1. Social Democrats</li> <li>2. Radical left</li> <li>3. <b>Conservatives</b></li> <li>4. Socialist Party</li> <li>5. Liberal Alliance</li> <li>6. Christian Democrats</li> <li>7. Danish People's party</li> <li>8. Danish Liberal Party</li> <li>9. Greens</li> <li>10. To no party</li> <li>11. Do not want to answer</li> </ol>
6	Which of the following parties is most right oriented?	<ol style="list-style-type: none"> <li>1. <b>Danish Liberal Party</b></li> <li>2. Social Democrats</li> <li>3. Socialist People's party</li> <li>4. Greens</li> <li>5. Do not know</li> <li>6. Do not want to answer</li> </ol>
7	What was the name of the Danish Prime Minister in the period 1982-1993?	<ol style="list-style-type: none"> <li>1. <b>Paul Schluter</b></li> <li>2. Poul Nyrup Rasmussen</li> <li>3. Anker Jørgensen</li> <li>4. Poul Hartling</li> <li>5. Do not know</li> </ol>
8	Who has the right to vote in local elections?	<ol style="list-style-type: none"> <li>1. You need to be 18 years old and living in the municipality</li> <li>2. <b>You need to be 18 years old and Danish citizen</b></li> <li>3. <b>Anyone over 18 years old who</b></li> </ol>

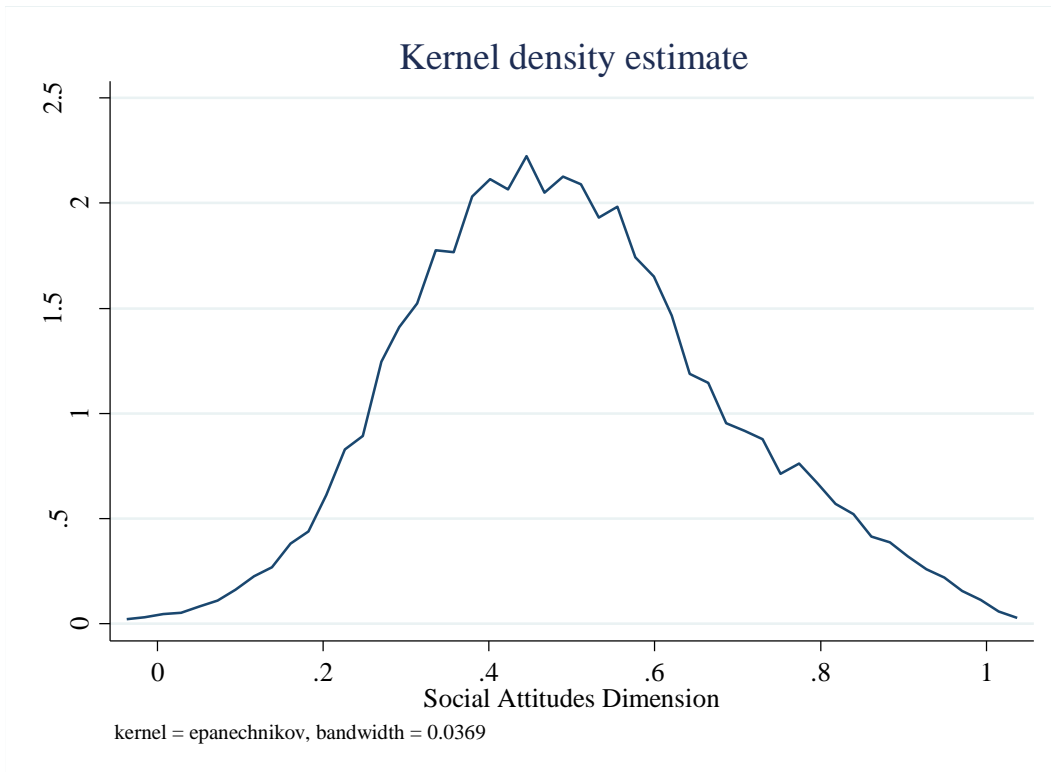
		<p><b>has lived in Denmark for more than four years</b></p> <p>4. Anyone over 18 years old</p>
9	Which of the following persons is not a member of the parliament? (picture)	<p>1. Peter Skaarup</p> <p><b>2. Unknown person</b></p> <p>3. Bertel Haarder</p> <p>4. Ole Sohn</p> <p>5. Do not want to answer</p>
10	Which of the following budget posts is the most expensive?	<p>1. School system</p> <p><b>2. Pensions</b></p> <p>3. Defense</p>
11	From which party is Mette Frederiksen a member?	<p><b>1. Social Democrats</b></p> <p>2. Radical left</p> <p>3. Conservatives</p> <p>4. Socialist Party</p> <p>5. Liberal Alliance</p> <p>6. Christian Democrats</p> <p>7. Danish People's party</p> <p>8. Danish Liberal Party</p> <p>9. Greens</p> <p>10. No party</p> <p>11. Do not want to answer</p>
12	From which party is Søren Pind a member?	<p>1. Social Democrats</p> <p>2. Radical left</p> <p>3. Conservatives</p> <p>4. Socialist Party</p> <p>5. Liberal Alliance</p> <p>6. Christian Democrats</p> <p>7. Danish People's party</p> <p><b>8. Danish Liberal Party</b></p> <p>9. Greens</p> <p>10. No party</p> <p>11. Do not want to answer</p>

*Note: Bold answer category in the third column signals the correct answer.*

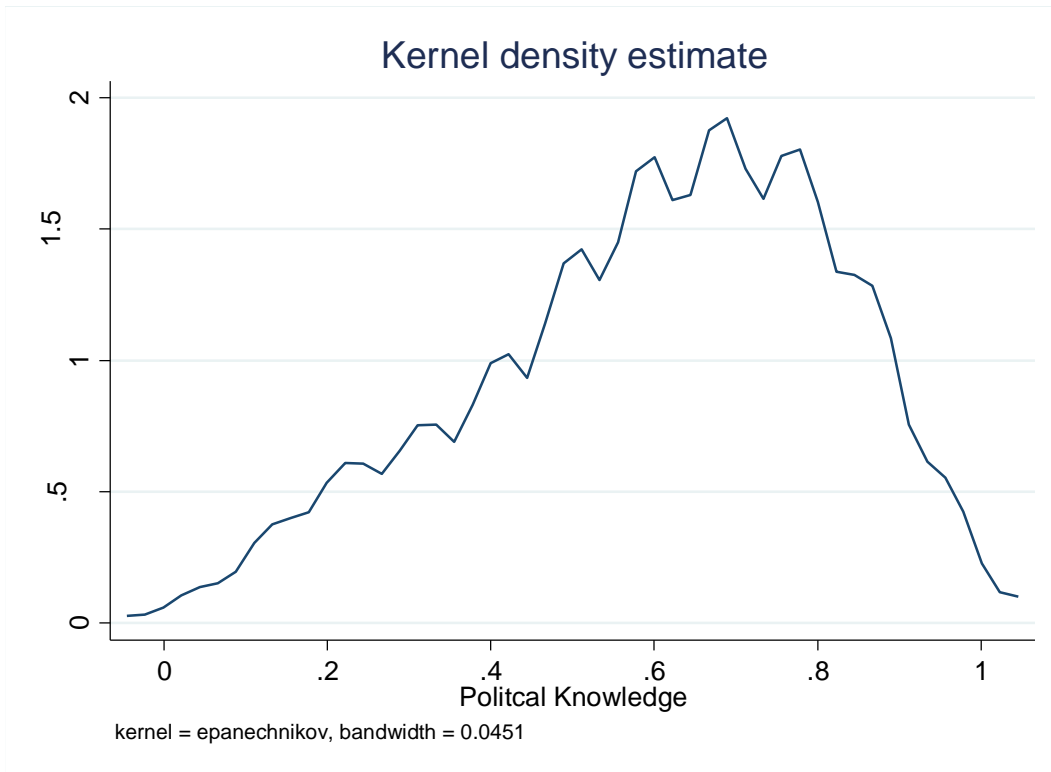
**Table 5.A.4** Item Wording Openness to Experience

Item Wording	Item Loading
1. I have a lively fantasy.	0.46
2. I enjoy concentrating on a fantasy or a daydream and let it grow.	0.53
3. Poetry does not tell me much.	0.64
4. Sometimes when I read a poem or looking at art, I feel a puff of pitch.	0.68
5. I rarely experience strong emotions.	0.35
6. It is the strangest thing - such as special scents or the names of distant places.	0.56
7. I often try new and unfamiliar food.	0.42
8. I find myself better in familiar surroundings.	0.31
9. I think that philosophical discussions are boring.	0.63
10. I have little interest in speculating over the universe mysteries or man.	0.61
11. I think that controversial speakers only serve to confuse.	0.30
12. I think that other people's perception of what is right and wrong, can differ.	0.28

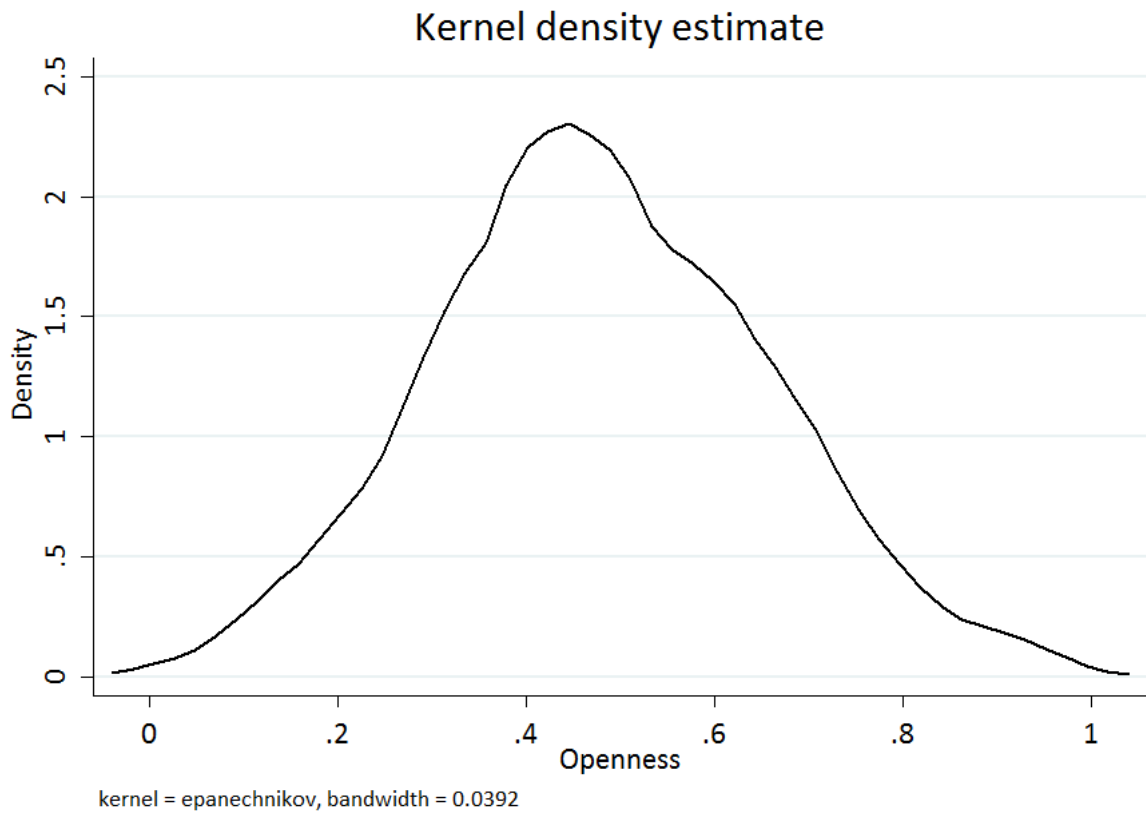
**Figure 5.A.1** Distribution of Social Attitudes Dimension



**Figure 5.A.2** Distribution of Political Knowledge Inventory



**Figure 5.A.3** Distribution of Openness to Experience



## 5. B – Outliers Included in Analyses

I have excluded two outliers with values above the total number of immigrants living in Denmark (e.g., 7,500,000 & 9,999,999). In Table B.1, I provide the descriptive statistics of the two outliers and in the third column the mean of the sample. Both outliers are part of the high anchor condition and are both male. They have more conservative social attitudes compared to the mean (see descriptive statistics in Supplementary Material Chapter 5 - A). The first outlier, 7500000, scores more than 1 standard deviation below the mean on political knowledge, whereas outlier two scores above the mean.

**Table 5.B.1** Descriptive Statistics of the two Outliers

	<b>Outlier 1</b>	<b>Outlier 2</b>
Non-Western Immigrants	7,500,000	9,999,999
Anchor	High	High
Social Attitudes	0.33	0.17
Knowledge	0.18	0.73
Gender	Male	Male
Age	24	23.37

Turning to OLS regression in Table 5.B.2, the overall conclusions drawn in this study hold. The upper panel of Figure 5.B.1 shows the predicted values in the interaction tested in model 1. A close inspection confirms that the two outliers do not affect the direction of the effects but do affect the uncertainty related to the estimated values of the number of non-Western immigrants in the high anchor condition and especially at the conservative pole of the social attitudes dimension. In Figure 5.B.1 the predicted values of number of non-Western immigrants in the high anchor condition at different values of social attitudes dimension a more hourglass shape among the conservative pole of the dimension (closer to zero). This suggests that the certainty of the estimates are lower with the inclusion of the outliers. This is not surprising and indeed suggests that the exceptional high values exert some leverage upon the estimated values. Importantly, the

substantial conclusions drawn in this study do not change. The conclusions in model 2 and 3 do not change. Whereas the results are robust in the full model as also can be seen in the lower panel of Figure 5.B.1



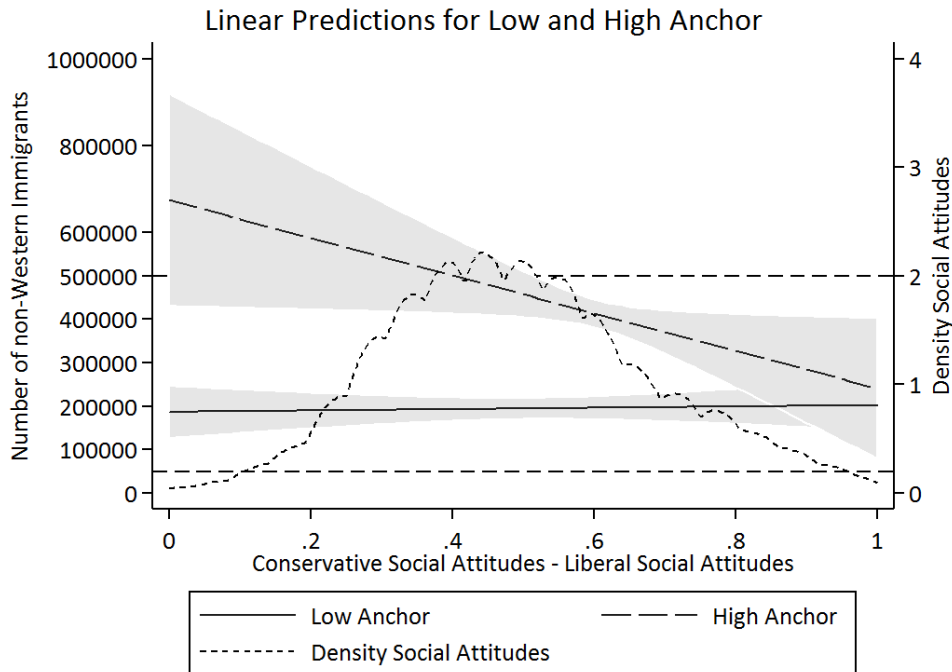
**Table 5.B.2** OLS Regression Models testing to what extent the Anchoring Heuristic, Social Attitudes, Political Knowledge, and Personality Predict Factual Beliefs about non-Western Immigrants while include two outliers

	1	2	3	4
Anchor (Ref. = low anchor)	488,131*	365,229*	446,556*	1,240,143
	(127,047)	(119,501)	(121,577)	(992,178)
Female	-56,792	-50,099	-60,483*	-53,223
	(31,625)	(28,617)	(29,796)	(27,895)
Age	-2,972	-1,701	-2,865	-1,973
	(4,960)	(5,410)	(4,918)	(6,078)
Social Attitudes	15,723	-	-	19,678
	(55,466)			(562,473)
Anchor X Social Attitudes	-449,822*	-	-	-943,474
	(208,987)			(1,483,617)
Political Knowledge	-	9,248	-	403,479
		(52,411)		(506,114)
Anchor X Political Knowledge	-	-166,507	-	-580,400
		(179,517)		(1,961,330)
Openness to Experience	-	-	117,022	689,207
			(78,509)	(1,133,169)
Anchor X Openness to Experience	-	-	-383,658	-1,989,552
			(215,045)	(1,823,591)
Social Attitudes X Political Knowledge	-	-	-	-202,817
				(775,508)
Social Attitudes X Openness to Experience	-	-	-	-296,569
				(1,624,044)
Political Knowledge X Openness to Experience	-	-	-	-992,968
				(1,482,670)
Anchor X Social Attitudes X Political Knowledge	-	-	-	-151,003
				(2,897,864)
Anchor X Social Attitudes X Openness to Experience	-	-	-	2,045,181
				(2,658,786)
Anchor X Political Knowledge X Openness to Experience	-	-	-	1,678,361
				(3,466,585)
Social Attitudes X Political Knowledge X Openness to Experience	-	-	-	668,615
				(2,142,139)
Anchor X Social Attitudes X Political X Openness to Experience	-	-	-	-1,031,337
				(4,832,804)
Constant	283,136*	252,263	233,605*	7,067
	(122,629)	(140,565)	(118,900)	(374,616)
N	962	986	985	961
R <sup>2</sup>	0.08	0.07	0.08	0.09

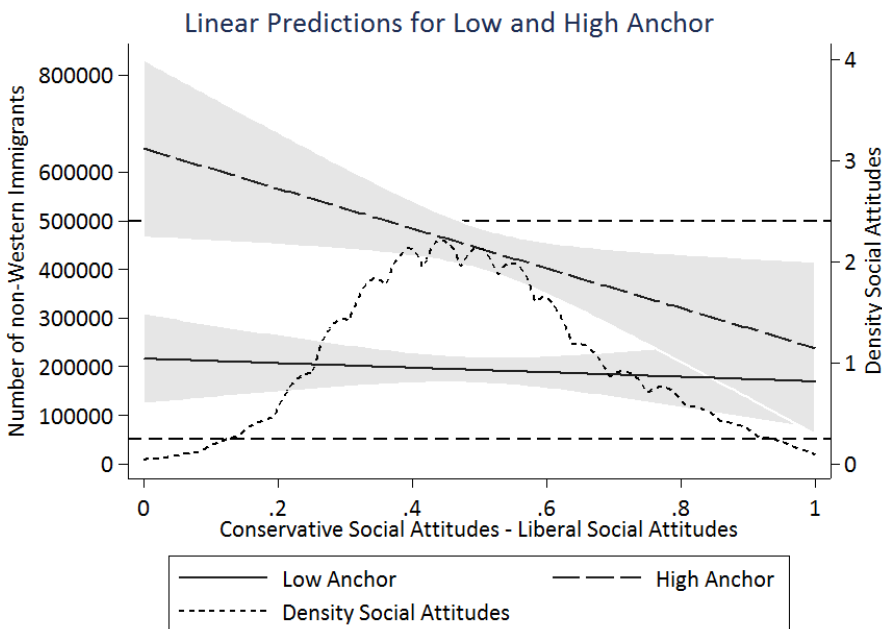
Entries are unstandardized OLS regression coefficients with Huber-White robust standard errors in the parentheses. The regression coefficients are presented without decimals. \*  $p < .05$ ; ^  $p < .1$ .

**Figure 5.B.1** Predicted Estimates of the Number of non-Western Immigrants in the Low and High Anchor Condition Conditional upon the Social Attitudes Dimension

**Model 1**



**Model 4**



## **5. C – Negative Binomial Regression**

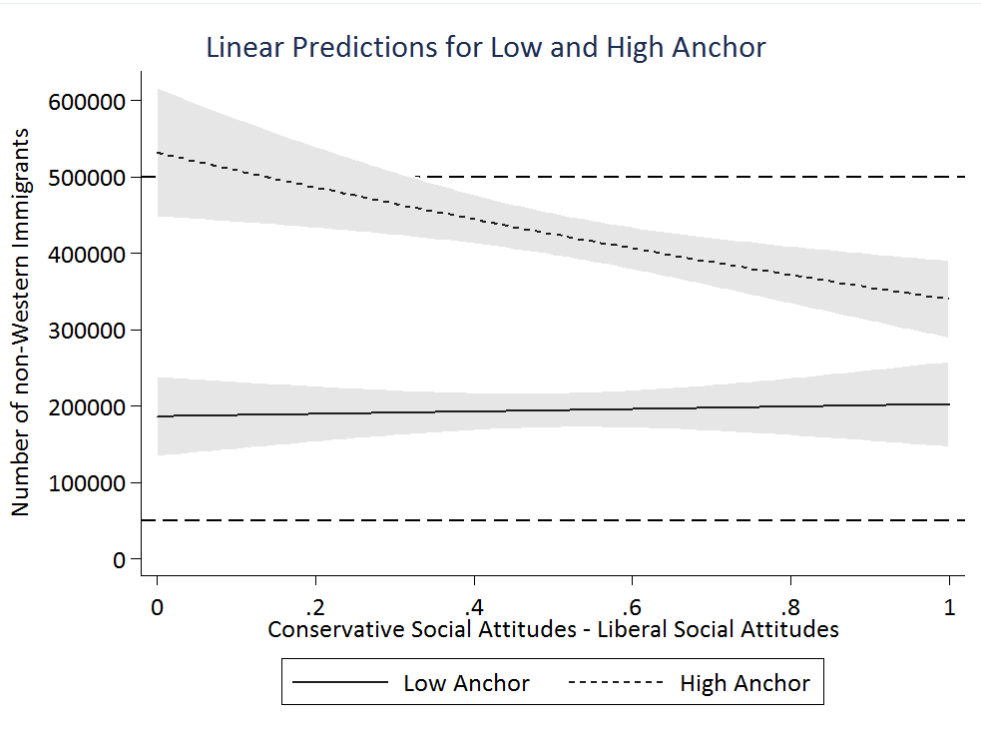
The dependent variable in this study measures the quantitative estimate of the number of immigrants. This is a count variable and a negative binomial model regression would be another appropriate model to test the hypotheses. I ran the negative binomial regression model (model 1) and arrived at substantively similar conclusions as the OLS regression models (see Table 5.C.1). See also Figure 5.C.1 where I project the predicted values for the social attitudes dimension. Again, political knowledge and Openness do not moderate the reliance upon the anchor. The results are also robust in the full model (see Figure 5.C.2).

**Table 5.C.1** Negative Binomial Regression Model testing to what extent the Anchoring Heuristic, Social Attitudes, Political Knowledge, and Personality Predict Factual Beliefs about non-Western Immigrants

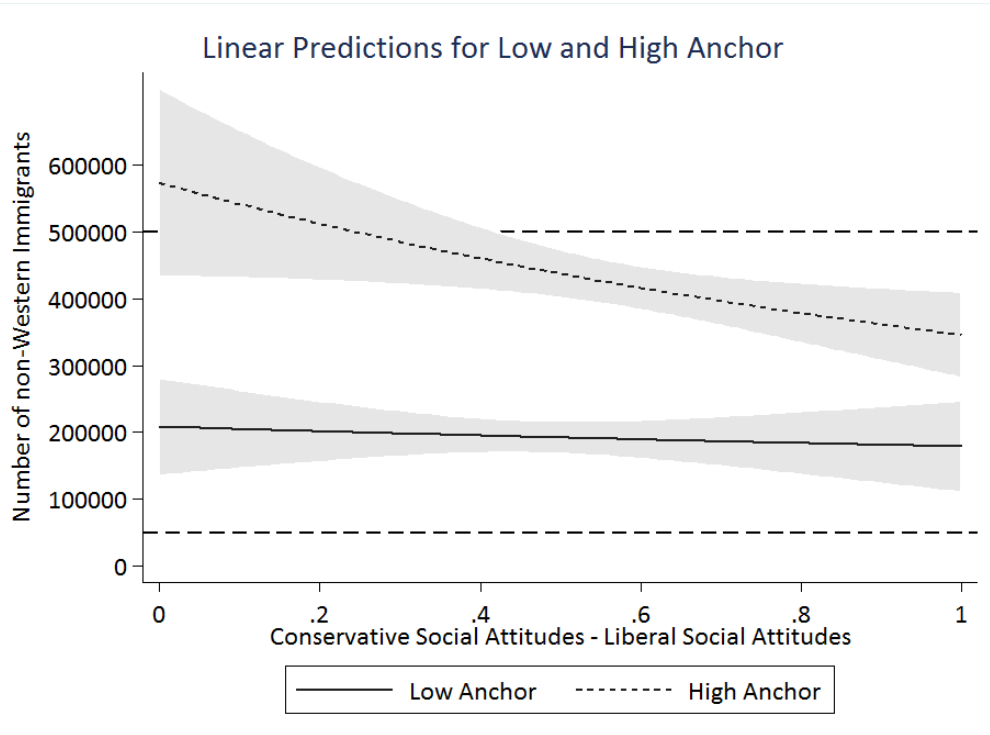
	1	2	3	4
Anchor (Ref. = low anchor)	2.85* (0.47)	2.43* (0.53)	2.98* (0.53)	7.08 (8.34)
Female	0.82* (0.05)	0.82* (0.05)	0.82* (0.05)	0.84* (0.05)
Age	0.98 (0.02)	0.98 (0.02)	0.98 (0.02)	0.98 (0.02)
Social Attitudes	1.09 (0.28)	-	-	0.58 (1.22)
Anchor X Social Attitudes	0.59 (0.18)	-	-	1.66 (4.09)
Political Knowledge	-	1.05 (0.27)	-	3.35 (5.30)
Anchor X Political Knowledge	-	0.84 (0.26)	-	0.12 (0.22)
Openness to Experience	-	-	1.76 (0.57)	6.33 (19.02)
Anchor X Openness to Experience	-	-	0.53 (0.20)	0.05 (0.15)
Social Attitudes X Political Knowledge	-	-	-	0.82 (2.47)
Social Attitudes X Openness to experience	-	-	-	1.71 (8.49)
Political Knowledge X Openness to Experience	-	-	-	0.06 (0.25)
Anchor X Social Attitudes X Political Knowledge				1.31 (4.64)
Anchor X Social Attitudes X Openness to Experience				1.28 (7.15)
Anchor X Political Knowledge X Openness to Experience				381.38 (1,727.30)
Social Attitudes X Political Knowledge X Openness to Experience	-	-	-	2.25 (15.11)
Anchor X Social Attitudes X Political X Openness to Experience	-	-	-	0.02 (0.19)
Constant	322,560.36* (132,052.69)	324,343.36* (148,677.23)	259,885.98* (105,819.31)	148,422.58* (163,608.66)
N	960	984	983	959
Wald Chi <sup>2</sup>	198	237	229	282
Log pseudolikelihood	-13,001	-13,329	-13,314	-12,980

Note: Entries are incidence rate ratios with standard errors in the parentheses. \*  $p < 0.05$

**Figure 5.C.1** Predicted Estimates of the Number of non-Western Immigrants in the Low and High Anchor Condition Conditional upon the Social Attitudes Dimension (Model 1)



**Figure 5.C.2** Predicted Estimates of the Number of non-Western Immigrants in the Low and High Anchor Condition Conditional upon the Social Attitudes Dimension (Model 4)



## 5. D – Other FFM Traits

In models 1 to 4 of Table 5.D.1, I include the interactions between the anchor and the other personality traits Conscientiousness, Extraversion, Agreeableness and Neuroticism. Not one of the interactions is significant. Inspection of the predicted values does not suggest that the other traits moderate the reliance upon the anchor. Plots are available upon request.

**Table D.1** OLS Regression Models testing to what extent the traits Conscientiousness, Extraversion, Agreeableness and Neuroticism Predict Factual Beliefs about non-Western Immigrants

	1	2	3	4
Anchor	274,203* (61,189)	261,459* (75,982)	248,634* (75,674)	207,412* (46,998)
Female	-66,064* (19,376)	-63,284* (19,118)	-74,228* (19,608)	-62,293* (20,482)
Age	-5,113 (4,413)	-5,672 (4,475)	-5,442 (4,469)	-5,781 (4,417)
Conscientiousness	-38,528 (71,332)	-	-	-
Anchor X Conscientious	-74,921 (101,585)	-	-	-
Extraversion	-	60,276 (91,376)	-	-
Anchor X Extraversion	-	-47,963 (116,617)	-	-
Agreeableness	-	-	-94,123 (91,080)	-
Anchor X Agreeableness	-	-	-29,056 (129,775)	-
Neuroticism	-	-	-	-9,451 (62,697)
Anchor X Neuroticism	-	-	-	54,618 (96,944)
Constant	365,892* (111,355)	317,246* (132,562)	411,532* (110,093)	361,439* (111,613)
N	983	982	983	983
R <sup>2</sup>	0.14	0.14	0.14	0.14

Entries are unstandardized OLS regression coefficients with Huber-White robust standard errors in the parentheses. The regression coefficients are presented without decimals.

\*  $p < 0.05$ .