

ABSTRACT

THAMES, KELLY M.. An Examination of Social Support Theory Across European Regions Over Time. (Under the direction of Dr. Patricia L. McCall.)

Since its introduction by Francis T. Cullen (1994) as an organizing concept for the field of criminology, social support theory has garnered interest from a number of scholars and received generally consistent empirical support. While the majority of the studies framed as direct tests of social support theory offer findings in support of the theory, these studies do not offer a consistent measure of social support and the measures used to test the theory tend to be rather narrowly conceptualized. What is more, tests of social support theory have, for the most part, been restricted to cross-sectional and to US and Western European analyses. The present project offers a test of Cullen's (1994) original formulation of social support theory that includes a more broadly defined measure of social support that is comparable across both Eastern and Western European countries. Using data gathered from the European Union's Eurostat data holdings, this study utilizes "hybrid" panel analysis to test the effects of social support on homicide rates across European regions from 1995 through 2005. Results offer partial support for social support theory.

An Examination of Social Support Theory Across European Regions Over Time

by
Kelly M. Thames

A thesis submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Master of Science

Sociology

Raleigh, North Carolina

2010

APPROVED BY:

Dr. Charles Tittle

Dr. Theodore Greenstein

Dr. Patricia McCall
Chair of Advisory Committee

BIOGRAPHY

Kelly M. Thames was born in Raleigh, North Carolina and raised in nearby Cary. In 2006, she earned a Bachelor of Arts in criminology at North Carolina State University. She is currently a PhD student in the Department of Sociology and Anthropology at North Carolina State University. Her research interests include crime, deviance, and social control (structural explanations of criminal offending, the influence of political context and social support on criminal behavior), as well as sociological and criminological theory.

ACKNOWLEDGMENTS

I first would like to thank Dr. Patricia McCall for her constant support, guidance, and patience. Throughout the development of this project, Dr. McCall has always been there, willing to meet with me on countless occasions. I am certain that having such a dedicated mentor has greatly contributed to my growth and development as a scholar. I am also deeply indebted to Dr. Charles Tittle, who has served as a teacher and a mentor throughout my time at NCSU. I greatly appreciate Dr. Tittle and Dr. Ted Greenstein for their insightful and helpful contributions to this project. I would like to thank Jon Brauer, whose advice has also been invaluable in this project's development. I would also like to thank my parents for their unwavering love and support. Finally, and far from forgotten, I would like to thank my tremendous network of friends and fellow graduate students who have been supportive in so many ways and have never let me forget to take time to relax and have fun.

TABLE OF CONTENTS

| | |
|---|-----|
| List of Tables..... | vi |
| List of Figures..... | vii |
| Introduction..... | 1 |
| Social Support Theory..... | 3 |
| Empirical Tests of Social Support..... | 7 |
| Dynamic Effects of Social Support Across Europe..... | 9 |
| Hypotheses..... | 10 |
| Data and Methods..... | 11 |
| Data Source and Sample..... | 11 |
| Dependent Variable..... | 15 |
| Independent Variables..... | 17 |
| Preliminary Analyses..... | 21 |
| General Trends..... | 21 |
| Heteroskedasticity, Collinearity, and the Partialing Fallacy..... | 21 |
| Analysis and Results..... | 22 |
| Statistical Technique..... | 22 |
| Results of Hybrid Panel Analyses..... | 25 |
| Discussion and Conclusion..... | 28 |
| References..... | 35 |

| | |
|--|----|
| Appendices..... | 47 |
| Propositions Outlining Cullen’s (1994) Social Support Theory..... | 48 |
| Representation of European Union NUTS Level 2 Regions in Data Set..... | 49 |

LIST OF TABLES

| | | |
|----------|---|----|
| Table 1 | Proportion of NUTS Level 2 regions represented | 41 |
| Table 2 | Descriptive statistics for regional homicide rates and predictor variables | 42 |
| Table 3a | Correlations between variables (1995) | 43 |
| Table 3b | Correlations between variables (2000) | 43 |
| Table 3c | Correlations between variables (2005) | 44 |
| Table 4 | Random intercept models predicting homicide | 45 |

LIST OF FIGURES

Figure 1 Model of Social Support Theory
 as Posited by Colvin, Cullen, and Vander Ven (2002).....46

INTRODUCTION

In his presidential address to the Academy of Criminal Justice Sciences, Francis T. Cullen (1994) proposed a theory meant to provide an organizing framework for the field of criminology. Specifically, Cullen argued that, while it has often been neglected by criminologists, the concept of *social support* has implicitly informed criminological theory since the early twentieth century. Cullen's ideas are drawn primarily from the work of the scholars of the Chicago School, who emphasized that "organized networks of human relations can assist people in meeting both expressive and instrumental needs" (Colvin, Cullen, and Vander Ven 2000:24). While these traditional theories tend to focus on the deleterious effects of the breakdown of these human relations networks (in other words, the negative phenomena that cause crime), Cullen shifts his focus to the forces that work to maintain, and even strengthen, these networks (the positive phenomena that work to prevent crime). Cullen conceptualizes these positive phenomena as social support and argues that social support can explain variation in levels of social control, individual involvement in crime, and aggregate crime rates (Cullen 1994; Chamlin and Cochran 2003). Specifically, according to Cullen's theory, social support is hypothesized to be negatively associated with crime (Cullen 1994).¹

¹ Since Cullen's (1994) introduction of social support theory, the theory has been expanded to incorporate the theme of coercion. Colvin, Cullen, and Vander Ven (2002) suggest an integration of social support and coercion theories, arguing that coercion (oppressive, anxiety-inducing forces that are hypothesized to be positively related to crime) and social support (which, again, is hypothesized to be negatively related to crime) are complimentary social forces whose interplay provides the foundation for their integration. Colvin et al.'s (2002) resultant differential social support and coercion theory of crime hypothesizes that the experience of differential levels of social support and coercion, delivered on either a consistent or erratic basis, explain crime at both the macro- and micro-levels. While Colvin et al.'s (2002) differential social support and coercion theory provides a valuable theoretical expansion of Cullen's (1994) original

An assessment of the body of literature examining Cullen's (1994) social support theory reveals that the theory and its underlying concepts have enjoyed generally consistent empirical support. While tests of theories related to social support theory (such as social disorganization, collective efficacy, social capital, social bonds, and institutional anomie) have provided partial support for social support theory, there have been relatively few direct tests of the theory (Kim and Pridemore 2005). To date, research by Chamlin and Cochran (1997), Chamlin, Novak, Lowenkamp, and Cochran (1999), Pratt and Godsey (2002, 2003), and Kim and Pridemore (2005) constitute the body of studies framed as direct empirical examinations of social support theory.

Although the majority of these studies offer support for social support theory, further empirical examination of the theory is warranted. The statistically null findings reported by Kim and Pridemore (2005) in their examination of social support in Russia highlight the need to further explore the effects of social support within transitional, unstable political and economic contexts (such as post-communist Eastern Europe)—a cross-national context not yet explored by scholars. What is more, these studies do not offer a consistent measure of social support and the measures used to test the theory tend to be rather narrowly conceptualized.

In light of these limitations, the present project offers a test of Cullen's (1994) original formulation of social support theory that includes a more broadly defined measure of social support than in previous studies that is comparable across Eastern and

formulation, the current project, along with much of the scholarly research investigating the effects of social support on crime, will focus exclusively on Cullen's social support paradigm.

Western European countries. Moreover, this study utilizes data holdings compiled by Eurostat, the European Union's statistical agency, allowing for a cross-national test of social support theory at a level of aggregation lower than the country-level. Specifically, Eurostat provide data for European regions analogous in size to U.S. states, which allows one to take advantage of intra-country variation in levels of social support and crime, thereby allowing for the extension of cross-national studies of crime beyond the country-level (the level of analysis currently dominating cross-national criminological research). Furthermore, the Eurostat archives provide historical data which allow for the examination of the dynamic nature of changing levels of social support on crime rates over time.

SOCIAL SUPPORT THEORY

Drawing from extant analyses of the concept (House 1981; Lin et al. 1986; Vaux 1988), Cullen (1994) defines social support as “the perceived or actual instrumental and/or expressive provisions supplied by the community, social networks, and confiding partners” (Lin 1986:18). As Cullen explains, this definition describes three major dimensions of social support. First, the objective delivery of social support must be distinguished from the recipient's subjective perception of social support. That is, social support is not mechanically received—individuals “interpret, appraise, and anticipate it in the context of social situations” (Cullen 1994: 530; also see Matsueda 1992). Second, social support is also described as being of an expressive and/or an instrumental nature.

According to Lin, instrumental social support entails using a relationship as a means to an end (or goal), “such as seeking a job, getting a loan, or finding someone to babysit” (1986:20). Instrumental social support also includes other types of assistance, such as “material and financial assistance and the giving of advice, guidance, and connections for positive social advancement in legitimate society” (Colvin, Cullen and Vander Ven 2002:24). Alternatively, expressive social support can take the form of a relationship which is an end in itself, as well as a means to an end. Expressive social support “is the activity of sharing sentiments, ventilating frustrations, reaching an understanding on issues and problems, and affirming one’s own as well as the other’s dignity” (Lin 1986:20). Expressive social support, then, is related to an individual’s emotional wellbeing, while instrumental social support is focused on the material and financial wellbeing of an individual.

Third, Cullen’s definition indicates that social support can exist at multiple levels of society. Cullen (1994) distinguishes between micro- and macro-level social supports. Micro-level social support can come from a variety of social relationships, including family and friendship relationships—a spouse, parent, child, neighbor, or a close friend can provide social support. Intimate relationships can provide both instrumental supports, such as financial support/advice, and expressive supports, such as companionship. Macro-level support, on the other hand, originates from social networks, communities, and/or larger ecological units (Cullen 1994). Macro-level social support, for instance, can include expressive supports received through networks and

communities, such as support groups or clubs created around common interests; macro-level supports can also include instrumental supports received through private organizations and/or the government, for example, welfare payments or complimentary financial advising.

Cullen (1994) expands upon Lin's definition of social support by delineating a fourth dimension of the concept: formal vs. informal delivery. Informal delivery of social support occurs through relationships with individuals not affiliated with any state/official agency. Formal social support is delivered through formal organizations, such as schools, government welfare programs, and even the criminal justice system. Again, these formal and informal delivery systems can provide an individual with both expressive and instrumental supports.

At the crux of Cullen's (1994) thesis is the hypothesis that, regardless of form, social support is negatively related to criminal behavior—a relationship that can be demonstrated at both the individual- and the macro-level. As Cullen explains, "Whether social support is delivered through government social programs, communities, social networks, families, interpersonal relations, or agents of the criminal justice system, it reduces criminal involvement" (1994:527). Cullen expounds upon this thesis in a series of 14 propositions (presented in Appendix A). Through these propositions, Cullen outlines the various mechanisms through which social support might reduce criminal involvement, including: reducing criminogenic strains (also see Cullen and Wright 1997); fostering effective parenting and nurturing strong family units; supplying both the human

and social capital required to desist from crime; creating opportunities for prosocial modeling; strengthening efforts at informal and formal social control; and reducing opportunities for victimization.

Cullen (1994) acknowledges that his propositions provide only a vague account of the nature of the mechanisms through which social support protects against criminal behavior, leaving a more precise delineation of those mechanisms to the knowledge gained through future research. Accordingly, through their extension of the social support paradigm, Colvin, Cullen, and Vander Ven (2002) present a more precise delineation of those mechanisms. Colvin et al. (2002) offer a model of differential social support, making clear that the effect of social support varies depending on whether it is delivered on either a consistent or erratic basis.² With these varying schedules of social support come varying social-psychological outcomes. Figure 1 provides a graphic representation of Colvin et al.'s explanation of the theory. As Figure 1 illustrates, while social support delivered on an erratic basis is hypothesized to lead to moderate levels of anger, low levels of self-control, and only moderately intense social bonds, social support delivered on a consistent basis leads to low levels of anger, high levels of internalized self control, and strong moral as well as social bonds. In other words, varying schedules of delivery of social support result in varying levels of social bonds and deviance/criminal behavior. These positive social-psychological responses to consistent social support are hypothesized to lead to high levels of prosocial behavior, minimal criminal involvement,

² Again, Colvin et al. (2002) extend social support theory to include the theme of coercion, which is also argued to be delivered on either a consistent or erratic basis, leading to varying levels of negative social-psychological outcomes and varying levels of deviance/criminal involvement.

and minimal mental health problems. Consistently delivered social support, then, works to minimize criminal behavior because it “creates compliance” through the meeting of individuals’ expressive and instrumental needs (Colvin et al. 2002:28).

While Colvin et al. (2002) present the mechanisms through which social support reduces criminal behavior by way of a micro-level model, the theory is easily extended to the macro-level (Cullen 1994; Cullen and Wright 1997; Colvin et al. 2002). Turning back to Cullen’s original propositions (see Appendix A), Cullen addresses the social ecology of social support, hypothesizing that the United States has higher rates of violent crime than other industrialized societies due to its low levels of social support. In fact, throughout his presentation of the social support paradigm, Cullen exemplifies the United States as a society organized (both culturally and structurally) against strong networks of social support. Cullen cites structural characteristics of the United States (including a stingy welfare system, the cultural emphasis on individualism, and high population mobility) and social-historical forces/transitions (including deindustrialization, the erosion of community social institutions, and detrimental changes in family structure) as obstacles to adequate levels of both instrumental and expressive social support within the United States.

Empirical Tests of Social Support

Relatively few studies have offered direct empirical tests of social support theory. Among economic indicators examined as explanations of crime rates, however, social support has received the most consistent theoretical support (Stamatel 2009). With the

exception of the work of Chamlin et al. (1999), who found a positive relationship between social support and U.S. violent crime rates and a statistically null relationship between social support and U.S. property crime rates, and the work of Kim and Pridemore (2005), who found no association between social support and homicide in Russia, the results of these studies are consistent with the expectations of social support theory. Regardless of conceptualization and measurement, social support has been found to be statistically significant and negatively related to homicide rates (e.g., DeFronzo 1983, 1997; Messner and Rosenfeld 1997; DeFronzo and Hannon 1998; Savolainen 2000; Pratt and Godsey 2003). As early as 1983, a negative relationship was noted between homicide rates among SMSAs and levels of AFDC economic assistance (DeFronzo 1983). This relationship between levels of AFDC assistance and homicide rates was corroborated in 1997, this time among U.S. cities (DeFronzo 1997). The research of DeFronzo and Hannon (1998) revealed a negative association between homicide and welfare payments as well as levels of welfare participation and homicide in a sample of U.S. counties.

According to Messner and Rosenfeld's (1997) cross-national test of institutional anomie theory, the decommodification index, a measure of the ability of governments to insulate citizens from deleterious market forces, is negatively related to homicide rates among 18 European countries. In a re-examination of Messner and Rosenfeld's test of institutional anomie theory, Savolainen (2000) reported a significant negative relationship between homicide and welfare as a percentage of total country-level government

spending. Finally, Pratt and Godsey (2003) confirm these earlier findings, revealing that the percentage of total GDP spent on healthcare is negatively related to country-level homicide rates in a more comprehensive examination of 46 countries. These generally consistent findings at different points in time and across various levels of analysis lend confidence to the validity of social support theory as a social force affecting crime rates. Nevertheless, an examination of the theory in an even wider variety of political and economic environments and using a more generalized measure of social support is warranted. Such exploration will allow for the investigation of social support theory's generalizability across time and social environments.

DYNAMIC EFFECTS OF SOCIAL SUPPORT ACROSS EUROPE

As previously discussed, the present study aims to investigate the effects of social support on crime rates across regions within Europe—including, European Union members, candidate countries, and members of the European Free Trade Association, which represent both Western European countries and post-communist Eastern European countries. The distinctions between Western and Eastern Europe are significant due to the variation in economic and political conditions of these areas, especially since the fall of communism in 1989. The transition from socialism to a democratic market economy was severely disruptive to countries of Eastern Europe, as the economic transformation led to mass unemployment, growing mortality rates, and alarming increases in poverty and inequality (Kim and Pridemore 2005; Stamatel 2009; Standing 1996). Following a

global trend of neoliberalization throughout recent decades, Western European countries have also experienced a rather turbulent period of economic and social policy transitions (Esping-Andersen 1996; Harvey 2005). However, unlike Western European countries, which managed to maintain equality despite rising unemployment, significantly weakened Eastern European governments have been unable to quell intensifying economic deprivation (Esping-Andersen 1996).

As it is presented by Cullen (1994), social support theory should explain variation in crime rates across these varied political and economic contexts. Moreover, if social support theory is to be upheld, regional levels of social support should explain the variation in crime rates across time; changes in levels of social support should be negatively associated with changes in rates of crime. Therefore, the present study examines the effects of social support across three time points—1995, 2000, and 2005—among a sample of Eastern and Western European regions.

HYPOTHESES

While social support theory can be tested at both the individual level (through a micro-level analysis of social supports gained by way of interpersonal networks) and the community level (through a macro-level analysis of social supports available to groups of individuals within communities and larger geographic regions), for the purposes of this analysis, instrumental social support applied at the macro-level will be evaluated.

Following Cullen's (1994) elucidation of social support theory, the following hypotheses are derived:

H₁: The association between intra-region change in social support and change in crime will be negative. This refers to the relationship between social support and crime over time within regions.

H₂: The association between inter-region social support and crime will be negative. This refers to the association between social support and crime across regions, or a "between-region" analysis.³

Hypothesis H₁ specifies a direct effect of social support on homicide rates from 1995 through 2005. Hypothesis H₂ concerns the universality (across the varied political climates of European countries) of the relationship between social support and homicide rates.

DATA AND METHODS

Data Source and Sample

All data included in this analysis have been gathered and made available to the public by Eurostat, the European Union's (EU) statistical agency. In cooperation with the statistical agencies of EU member and candidate nations, Eurostat collects a variety of social and economic indicators, including social support and homicide data, provided on

³ Studies of the effects of impoverishment on homicide have included welfare support as another indicator of the economic needs of an area. Although theoretical rationale makes this assumption plausible, the current project aims to control for this conceptualization of social support through the inclusion of a measure of poverty.

a voluntary basis, from member nations, candidate nations, and members of the European Free Trade Association (EFTA). These data represent indicators at various levels of aggregation and multiple time-points. A variety of indicators are available annually at the country level. For lower levels of aggregation, data are collected every five years and most indicators are available beginning around 1995. Eurostat's data holdings are an invaluable resource for researchers conducting cross-national studies, as measures are standardized across countries to allow for the highest possible comparability (Eurostat 2004, 2005).

One of the great advantages of Eurostat's data holdings is the availability of data at sub-national levels of aggregation; Eurostat collects and compiles data from participating nations at the regional-, metropolitan- and city-level. While extant tests of social support theory have focused on a variety of levels of aggregation both within and between countries—including U.S. cities (Chamlin and Cochran 1997), U.S. states (Chamlin, Novak, Lowenkamp, and Cochran 1999), countries (Pratt and Godsey 2002, 2003), and regions within Russia (Kim and Pridemore 2005)—the cross-national tests of the theory have been limited to the country-level. A cross-national test of social support theory at the region-level is made possible by this archive. This allows the researcher to take advantage of variation in both the independent and dependent variables across these regions—variation that otherwise is masked with country-level measures. Therefore, the

units of analysis for this study are regional areas of European Union member and candidate nations and EFTA countries approximately equivalent in size to U.S. states.⁴

In addition to the availability of data for subnational levels of aggregation, yet another advantage to Eurostat data is the availability of data from Eastern European nations. While Pratt and Godsey's (2002, 2003) cross-national analyses included several nations outside of Europe, their sample did not include any Eastern European nations. Kim and Pridemore (2005) offered an analysis of the effects of social support on homicide rates in Russian regions but did not examine social support theory in any other post-communist contexts. Fortunately, Eurostat currently offers data from the following Eastern nations: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia.

While the availability of data from both western democratic and eastern post-communist countries allows for an investigation of the effects of social support across a variety of political and economic contexts, and Eurostat regularly updates these data, the data files available within the Eurostat archives are by no means complete (most likely due to the voluntary nature of Eurostat's collection process). Therefore, the sample included in the present study has been significantly restricted by the limited comprehensiveness of Eurostat data (particularly Eurostat's data holdings at lower levels

⁴ Eurostat regional statistics are organized based upon the "Nomenclature of Statistical Territorial Units" (NUTS) classification system, a hierarchical system through which member countries are subdivided into three region levels—NUTS level 1, NUTS level 2, and NUTS level 3. These region levels are determined based upon minimum and maximum population thresholds. The current project utilizes statistics documented for NUTS level 2 regions (hereafter referred to simply as "regions"), which have resident populations between 800,000 and 7 million (Eurostat 2004, 2005).

of aggregation). The Eurostat archives offer a variety of indicators for 271 regions in the 27 EU member states (Belgium, Bulgaria, Czech Republic, Denmark, Germany, Estonia, Ireland, Greece, Spain, France, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland, Sweden, and the UK), 30 regions in the three current candidate countries (Croatia, the former Yugoslav Republic of Macedonia, and Turkey), and 16 regions in four EFTA countries (Iceland, Liechtenstein, Norway, and Switzerland). Unfortunately, due to data limitations, the present analysis includes only a portion of these regions.

Appendix B offers an in-depth account of the sample of regions included in the analyses. Organized, first, by country status as EU member, candidate country, or EFTA member, and, then, by country (alphabetical) within each category, Appendix B indicates which regions have reported complete data for all indicators included in the present analysis for 1995, 2000, and 2005. Of the 34 countries represented in Eurostat's archives, only Austria, France, Greece, the Netherlands, and Sweden boast of nearly complete representation across all three study time periods (although not across all regions within each country). Several countries are represented with fairly complete data across two of the three time periods: for instance, nearly all Italian regions possess complete data for the years 1995 and 2000, whereas all regions are represented in 2000 and 2005 for Hungary, Romania, Finland and the Czech Republic. Other countries are included in the sample for a single time period: complete data for regions of Germany, Spain, Poland, and Slovakia are available for only 2005. Unfortunately, a number of

countries, including Bulgaria, Denmark, Estonia, Cyprus, Latvia, Lithuania, Luxembourg, Slovenia, the UK, and all candidate and EFTA countries, are not included in this study, as these countries did not offer complete data for any of the study years. Table 1 offers a more succinct description of countries' representation across study years.

While Appendix B and Table 1 clearly illustrate the current limitations in the Eurostat data holdings, the final sample included in this study remains substantial and represents countries characterized by widely varying political and economic characteristics. The final study sample consists of 397 total regions within 17 countries; 97 regions are included in the 1995 subsample; 124 regions are included for the year 2000; and 176 regions are included for the year 2005. Fortunately, a total of five of the twelve Eastern European countries are included in the sample, including the Czech Republic, Hungary, Poland, Romania, and Slovakia. The remaining regions are located in twelve western EU member countries, including Austria, Belgium, Germany, Ireland, Greece, Spain, France, Italy, the Netherlands, Portugal, Finland, and Sweden. Whereas the findings from this study may not be generalizable across all European countries, these regions provide a good sample of regions across Western and Eastern European countries.

Dependent Variable

As previously discussed, the present study will focus on the effects of social support on rates of homicide across regions within these European countries. Because homicide is a crime that is defined most similarly across countries, it is considered to be

the most appropriate measure of violent crime for cross-national studies (LaFree 1999). As such, scholars often employ homicide rates (as opposed to rates of other types of violent crime, such as rape, aggravated assault, or robbery) in empirical analyses. Not only is homicide argued to be the most accurately reported of all crimes (both in the United States and internationally), but the seriousness of homicide and the difficulty associated with concealing homicide make it a crime of relatively reliable measure and particularly salient public concern. For these reasons, the number of homicide victims will serve as the measure for crime.

Eurostat provides homicide statistics in the form of cause of death data, which are classified according to the *International Classification of Diseases* codes published by the World Health Organization (Eurostat 2004, 2005). Consequently, Eurostat data are equivalent in quality to those of the World Health Organization, the database widely considered to be the most reliable and valid source of data for cross-national studies of homicide (LaFree 1999). Eurostat provides age-standardized homicide rates (per 100,000 resident population) as three year averaged rates. Such averaging will allow for the avoidance of overly inflated and/or deflated rates that result from extreme yearly fluctuations and from unusual events (such as mass murder). Age-standardization allows for the comparability of homicide rates across countries, as the measure acts as a control for each country's age of their population—that is, control for the size of the population over each of the age groups. Such standardization is particularly important when studying a social phenomenon that may be more or less likely to be represented among

certain age groups. As violent crime is generally regarded as a behavior demonstrated more often by young adults than by older adults, age-standardization is necessary to control for the existence of larger or smaller populations of individuals in crime-prone age categories across countries as well as individuals in non-crime-prone age categories.

For the purposes of this analysis, in an effort to maximize sample size, five-year averaged, age-standardized homicide rates (logarithmically transformed to the base 10) for the years 1994-1999 (representing the year 1995), 1998-2003 (representing the year 2000), and 2003-2007 (representing the year 2005) will be employed. Descriptive statistics for homicide and all predictor variables are presented in Table 2. As Table 2 indicates, homicide rates across regions in 1995 range from .1 to 4.5 per 100,000 population, with a mean of 1.038. In 2000, homicide rates ranged from .2 to 6.3 per 100,000 population, with a mean of 1.16. Finally, in 2005, homicide rates mirrored the 2000 figures and ranged from .2 to 6.5, with a mean of 1.17.

Independent Variables

As previously discussed, the key independent variable in the present analysis will be a region-level social support measure provided by Eurostat. As social support theory does not explicitly suggest a particular operationalization of social support, previous studies testing social support theory have offered a variety of measures representing the concept. With the exception of Chamlin and Cochran (1997:204), who define social support as “the willingness of communities to commit scarce resources to the aid and comfort of their members, distinct from the beneficence of the state,” and measure social

support as city-level United Way contributions, scholars have measured social support in the form of support provided by the government. For instance, Chamlin et al. (1999) measure social support via a ratio of tax deductible contributions to the number of tax returns; Pratt and Godsey (2002) use the proportion of national budgets spent on healthcare and education. Later, Pratt and Godsey (2003) include only a single measure, the proportion of the national budget spent on healthcare. Following Pratt and Godsey (2002), Kim and Pridemore (2005) include two measures, the proportion of regional budget spent on healthcare and on education.

While, as a whole, the measures of social support employed by these scholars are somewhat diverse, taken independently, the measures are fairly narrow in their operationalization of the concept. Fortunately, the measure of social support provided by Eurostat allows for a broader operationalization of social support. Specifically, Eurostat offers a standardized measure of the total social protection expenditure per capita (reported in thousands of Euros), which is defined as "all interventions from public and private organizations to relieve households and individuals of the burden of a defined set of risks or needs" (Eurostat 2004, 2005). These risks/needs include: sickness/health care, disability, old age, survivors, family/children, unemployment, housing, and "social exclusion not elsewhere classified" (Eurostat 2004). This measure allows the current analysis to reliably account for a wide range of sources of social support in each region, which include supports provided by both national and subnational public and private organizations. Because Eurostat has taken care to ensure comparability across countries

(and, consequently, regions), this social support measure should prove to be valuable to researchers interested in testing social support theory within the European community. To further control for inflation across time periods, the social support measure employed herein has been transformed to reflect constant 2005 Euros (Eurostat 2004, 2005).⁵

As Table 2 indicates, in 1995, regional social support ranged from .092 to 5.21 (again, this measure is reported in thousands of Euros per capita), with a mean of 1.35. In 2000, social support ranged from .061 to 5.72, with a slightly higher mean of 3.08. And, in 2005, social support ranged from .196, 6.84, with a much higher mean of 4.06 than five years earlier.

Following previous studies of aggregate rates of homicide and tests of social support theory, a number of structural variables identified as covariates of homicide in both the United States and Europe are included in the analyses (Chamlin and Cochran 1997; Kim and Pridemore 2005; Land et al., 1990; Pratt and Godsey 2003, 2002). These variables include indicators of economic deprivation/poverty (measured in the present study via infant mortality), population structure (measured as an additive index comprised of total regional population and population density, that is, population per square kilometer—both components in natural log form), and percentage of total population over the age of 65 years. Detailed descriptive statistics for these variables are reported in Table 2.

⁵ The European Council uses a Harmonized Indices of Consumer Prices (HICP-CPI), which is comparable to our Consumer Price Index. The HICP-CPI is available in Eurostat data holdings. A description of this HICP-CPI can be found at: <http://epp.eurostat.ec.europa.eu/portal/page/portal/hicp/documents/Tab/Tab/HICP-CPI%20DIFFERENCES>.

In studies of US crime rates, scholars have commonly included a variety of indicators of economic deprivation, including unemployment, indicators of mean disposable income, and various measures of income inequality (Messner, Raffalovich, and Sutton 2010). However, due to data limitations and collinearity problems characteristic of cross-national measures of absolute and relative deprivation, cross-national studies have most often included indicators of overall economic development (such as a the GDP and/or the human development index) and/or measures of relative deprivation (such as the Gini index) in the place of income-based measures of deprivation (Pridemore 2008; Messner et al. 2010). While Messner et al. (2010) find that measures of relative deprivation better predict cross-national rates of homicide, Eurostat archives do not supply the sufficient income-based data necessary to compile such measures at the regional level. As infant mortality has been suggested as an admirable proxy (if not wholly more appropriate measure) of absolute deprivation/poverty in cross-national research (Pridemore 2008) and as region level measures of income inequality, unemployment, or mean disposable income are unavailable from Eurostat, infant mortality is included in the present analyses as a proxy for poverty/economic deprivation.

Finally, the percentage of the population over the age of 65 is included as a control variable in an effort to control for those growing aging populations who are likely to have great social needs, including disability, old age, survivors, and sickness/health. As a reflection of the unique needs, those countries with larger populations of individuals

falling within the elderly age groups may have higher demands and thereby pay higher levels of social support.

Preliminary Analyses

General Trends

An examination of bivariate scatterplots reflecting logged regional homicide rates within each country over time indicates a pattern of generally decreasing homicide rates from 1995 to 2005. While there are a small number of exceptions to this trend, such as France and Italy (whose homicide rates indicate a slight increase over time), overall, homicide rates have decreased. In contrast, social support is found to have generally increased across this period. These trends are consistent across both Western and Eastern European countries.

Heteroskedasticity, Collinearity and the Partialing Fallacy

Indications of both heteroskedasticity and collinearity among variables included in the analyses led to data transformation and concerns over model specification. An examination of residuals plotted against fitted values generated using ordinary least squares regression at each cross-section (1995, 2000, and 2005) led to the detection of heteroskedasticity, the correction of which involved the decision to log transform the homicide rate—a transformation that is common in aggregate level studies of homicide. Residual analysis conducted after the log transformation indicated no patterns of unequal error variance remained. Additionally, inspection of bivariate correlation matrices (presented for each study year in Tables 3a-3c) indicates moderately high correlations

among some of the study variables. One would anticipate that regions with high levels of social need (including high rates of poverty) are likely to exhibit high levels of social support. Not surprisingly, the high correlations among these variables (social support and infant mortality) are illustrated, particularly in 1995. Problems such as collinearity, especially when the intercorrelation of two or more predictor variables is greater than the correlation between those predictors and the dependent variable, can result in compromised reliability of parameter estimates and can lead to the “partialing fallacy” (Gordon 1968). Partialing occurs when the allocation of all of the shared explained variance is attributed to the predictor that is most highly correlated with the dependent variable, resulting in significance tests that reveal a significant coefficient for only one of the predictor variables when, if not for the partialing fallacy, each predictor’s coefficient would have been significant (Land et al. 1990; Parker et al. 1999). Even with bivariate correlations ranging between .54 and .67, results of models presented herein should be interpreted with caution, as the unique effects of predictor variables may erroneously be found not statistically significant.

ANALYSIS AND RESULTS

Statistical Technique

In order to sufficiently test the hypothesized relationships between social support and homicide, a series of “hybrid” panel analysis regression models were estimated. The two most often used methods for the analysis of cross-sectional time-series data—that is,

data characterized by multiple measures of single units over time—are fixed effects and random effects regression models (Allison 2005; Ousey and Wilcox 2007; Phillips and Greenburg 2008). Each of these models, however, suffers from significant limitations. While fixed effects models allow only for the estimation of the within-region effects of social support on homicide—treating the between-region effects as fixed and estimable, random effects models treat the between-region effects as independent and randomly distributed, estimating parameters that represent the combined effects of between- and within-region components (Phillips 2006).

In order to bypass these limitations and following extant criminological literature, the present study employs a “hybrid model” (Allison 2005; Horney, Osgood, and Marshall 1995; Phillips 2006; Ousey and Wilcox 2007). The hybrid model allows for the estimation of parameter coefficients that are equivalent to those yielded by the fixed effects model (estimates are net of the effects of time-invariant characteristics of regions) and, unlike the random effects model, allows for the separation of these within-region effects from between-region effects. In other words, the hybrid model allows for the estimation of both the “over time” effects of social support on homicide (the within-region/intra-region effect) and the effects of social support on homicide across regions (the between-region/inter-region effects) (Allison 2005). The hybrid model, then, takes the following form:

$$y_{jt} = \alpha + \beta X_j + \eta(x_{jt} - X_j) + \nu_j + \varepsilon_{jt}$$

The dependent variable y_{jt} represents the logged homicide rate for region j and year t , where α signifies the intercept, β indicates the parameter estimate of between-region differences (between-region differences are represented by region means, X_j), η represents the effects of within-region variation, and x_{jt} represents the predictor for region j at time t (Bryk and Raudenbush 1992; Johnston and DiNardo 1997; Judge et al. 1985; Phillips 2006). The region-specific error term is represented by v_j , while the ε_{jt} denotes the model error term that contains the random variation within regions over time. The inclusion of v_j in the model acts as a control for unique, region-specific characteristics, such as war or other political and/or economic transitions.

In order to employ the hybrid model approach, the time-varying predictors (social support, infant mortality, and percent of the population over 65) must be separated into their respective between-region and within-region components. The between-region component of each predictor is acquired by calculating a mean score for each region—regional scores are averaged over the three study years (denoted X_j). This between-region component offers an examination of the effect of predictors across place; in other words, the between-region component is comparable to a cross-sectional analysis and, therefore, provides an estimation of the lasting (or “permanent”) effects of a predictor—the “stock” effect (see Phillips 2006). The within-region component of each predictor is computed by calculating the difference between the value of the predictor at each time point and the mean score of the predictor for each region over the three time points (denoted $x_{jt} - X_j$). Distinct from the stock effects estimated via the between-region

component, the within-region component of the hybrid model offers an estimation of the transitory (or “temporary”) effect of explanatory variables across time—the “flow” effects (Phillips 2006). Both the between-region and within-region components are included in a random-intercept regression model predicting the logged homicide rate. Additionally, in order to better control for possible year effects, dummy variables representing the years 2000 and 2005 (1995 is omitted as a reference year) are included in the models. The within-region component of this hybrid model has allowed for the evaluation of hypothesis H₁, as estimates indicate the effects of social support within regions over the three time points. A test of hypothesis H₂ is made possible through the between-region component of this model, as estimates indicate the effect of social support across regions. The findings from the hybrid regression models are discussed below.

Results of Hybrid Panel Analyses

In an effort to sufficiently test the hypothesized relationship between social support and homicide between regions and within regions over time, a series of six hybrid models was estimated. The results of the various model specifications used to test the hypotheses are presented in Table 4, with between region effects in the top half of the table and within region effects following. R-square values for the models’ between and within region components are also presented.

Models 1 through 3 represent the effects of social support, infant mortality, population structure, and percent of the population over 65 on European regional

homicide rates from 1995 through 2005. The results of model 1 indicate that, while infant mortality and the percentage of a region's population over the age of 65 are statistically significantly related to homicide rates between regions, neither the effects of social support nor the effects of population structure are statistically significant.

According to the within-region effects of predictors presented in model 1, changes between 1995 and 2005 in levels of social support, infant mortality, population structure, and the percentage of the population over 65 are not significantly related to changes in homicide rates. Model 1, then, suggests that although differences in levels of infant mortality and the percentage of the population over the age of 65 do account for differences in homicide rates across regions, over-time variations in social support, infant mortality, population structure, and percentage of the population over the age of 65 are not systematically associated with within-region change in homicide rates. Accordingly, these results fail to confirm both hypothesis H_1 and H_2 , as social support does not explain variation in either between-region or within-region homicide net of infant mortality, population structure, and percentage over age 65.

While model 1 does not offer support for social support theory, because preliminary analyses suggested problems associated with the partialing fallacy, model 2 tests whether the effect of social support is being suppressed by infant mortality in model 1. More specifically, as infant mortality and social support are more highly correlated with one another than with homicide—particularly in 1995 (once again, see Tables 3a-3c)—infant mortality is omitted from model 2 to determine whether the null finding

associated with social support in model 1 is a statistical artifact. Consistent with this suspicion, model 2 shows that the omission of infant mortality renders the effect of social support statistically significant in the theoretically hypothesized direction, offering equivocal support for hypothesis H₁—regions with higher levels of social support are predicted to have lower rates of homicide. The within-region component of model 2 also indicates that, while changes in the percentage of regional population over the age of 65 are related to changes in homicide within regions over time, social support, infant mortality, and population structure are not systematically related to changes in within-region homicide rates; these findings fail to support hypothesis H₂. Taken together, then, the results of models 1 through 3 indicate that, net of other factors, social support, infant mortality, and percentage of a region's population over the age of 65 work to explain variation in homicide as theoretically expected across European regions, offering partial and equivocal support for social support theory and corroborating extant cross-national homicide studies. As expected from previous cross-sectional studies, parameter coefficients in model 3 for between-region effects are statistically significant in the theoretically posited direction. The within-region effects estimating changes from 1995 to 2005 are not significant.

While models 1 through 3 test the research hypotheses over the entire study period, problems associated with the partialing fallacy that are apparent in 1995 warrant further investigation of the effects of social support on regional homicide rates. What is more, a careful examination of Appendix B will reveal that data from Eastern European

regions are largely absent from the data set until the year 2000. For these reasons, the analyses are replicated and parameter coefficients are re-estimated using only data for the years 2000 and 2005. These results are presented in models 4 through 6 in Table 4.

The results of models 4 through 6 offer further support for hypothesis H₁, as, net of the controls, social support is significant and negatively related to between-region homicide rates. Consistent with the between-region component of models 1 through 3, infant mortality and the percentage of the population over the age of 65 are found to explain variation in homicide rates across all three re-estimated models. Within-region components of models 4 through 6 are also consistent with the models 1 through 3, as null findings across predictors fail to support hypothesis H₂. Altogether, results of the hybrid panel models presented in models 1 through 6 offer only partial support for social support theory, as findings are in accord with the predictions of hypothesis H₁ but not consistent with those of hypothesis H₂.

DISCUSSION AND CONCLUSION

Since its introduction by Francis T. Cullen (1994), social support theory has garnered interest from a number of scholars and received generally consistent empirical support. Extant literature examining social support, however, has been limited in both scope and measurement. This project has presented a test of social support theory that not only allowed for the broadening of the operationalization of social support but also an

investigation of the effects of social support across time and European regions characterized by varied political and economic contexts.

Hybrid panel analyses revealed findings that offer only partial support for research hypotheses and, therefore, equivocal support for social support theory. Results for models including data from 1995 through 2005 suggest that, when controlling for the effects of poverty, population structure, and the percentage of the population over the age of 65 (indicators known to covary with homicide), social support is not systematically related to homicide between regions. Only when poverty is omitted from the model is social support found to be related to homicide in a manner consistent with Cullen's theory—statistically significant and negative. Additionally, these models suggest that, regardless of the model specification (inclusion or omission of poverty), variation in levels of social support are not related to within-region variation in rates of homicide. In other words, changing levels of social support within regions from 1995 to 2005 do not explain changes in regional homicide rates during this time period. However, when excluding the effects of poverty, levels of social support are systematically related to homicide rates between these same regions.

While, on the surface, these results for the 1995 through 2005 panel analyses do not offer indisputable support for social support theory, the presence of a statistically significant, negative relationship between social support and homicide (in the absence of a measure of poverty) indicates that social support is not simply measuring a dimension of economic deprivation. While it has been used as an indicator of economic deprivation

in other research, Cullen's theory proposes that social support acts as a buffer against the deleterious effects of economic deprivation—a proposition that seems to receive some support by these results.

The re-estimation of these models with data for the years 2000 and 2005 revealed a slightly more optimistic depiction of the relationship between social support and crime. Social support is found to be statistically significant and negatively related to rates of homicide between regions net of the effects of poverty, percentage of the population over the age of 65, and population structure. Consistent with the 1995 through 2005 analyses, however, within-region variation in levels of social support is not found to be systematically related to within-region variation in homicide rates.

While the current project provides no support for social support theory when tested over time, these findings are consistent with previous cross-sectional tests of the theory, as the between-region component of the hybrid panel model is, in essence, equivalent to a cross-sectional analysis (Phillips 2006). As previously discussed, extant tests of social support theory have utilized cross-sectional data and, like the present study, have found social support to be negative and significantly related to crime rates (e.g., DeFronzo 1983, 1997; Messner and Rosenfeld 1997; DeFronzo and Hannon 1998; Savolainen 2000; Pratt and Godsey 2003). Taken together, these results suggest that the statistically significant effect of social support found in the present analysis is not merely a statistical artifact.

And although the present study does not offer longitudinal support for the theory, the explanatory power of social support theory to account for longitudinal variation in crime rates cannot be wholly discounted. The varying results across the between-region and within-region component of the hybrid model may be attributed to the distinction between the effects of explanatory variables across place as opposed to time—the stock vs. the flow effects of a predictor (see Phillips 2006). Scholars have noted differences in the stock effects of explanatory variables captured via cross-sectional analyses and the flow effects of explanatory variables most often captured via time-series analyses (e.g., Koreman and Miller 1997; Teachman et al. 1997; Phillips 2006). As Phillips explains, “Changes over time typically constitute temporary shifts, and adjustments to the shifts do not necessarily happen immediately” (2006:951). Accordingly, the statistically null relationship between social support and homicide found within regions over time might be a result of this distinction between permanent and temporary effects. The introduction of lagged crime rates into future longitudinal tests of social support theory may help confirm or invalidate this explanation.⁶ Alternatively, the statistically null effect of social support over time may simply be the result of limited variation in homicide rates over the study period. While regional homicide rates are generally decreasing (as evidenced in Figures 2a through 2c), the magnitude of this change may not offer a great deal of variation to explain. As future waves of data become available, the potential limitations associated with statistically inadequate change over time may be remedied.

⁶ Data were examined to determine if lagged homicide rates could be included in the current project. However, because of the unavailability of annual standardized homicide rates and the risk of losing a significant number of cases, introduction of lagged homicide rates was not viable.

In addition to the limited range of key variables and the unavailability of longitudinal data points for regions across all time points, a number of further limitations suggest that the present study's results be considered cautiously. As previously discussed, issues of collinearity—especially in 1995—may be affecting results; more specifically, issues related to partialing may be obscuring the relationship between social support and homicide when both social support and poverty are included in the analysis for the years 1995 through 2005. Additionally, while the study sample includes European regions characterized by varying social and political contexts, the limited number of countries represented in the analysis does not allow for the results to be generalizable across all European countries. While a number of Eastern European countries are represented, the bulk of sampled regions are located within Western Europe. Not only does this limitation restrict the generalizability of study findings, but, similar to problems related to the partialing fallacy, the lack of Eastern European countries in the earliest study year may also be implicated in the disparity in the predicted effects of social support across the full models of the two time periods (1995 through 2005 and 2000 through 2005). Given the turbulent social, political, and economic histories of Eastern European countries, it seems plausible that social support may behave differently in these societies than those of Western Europe. A more complete sampling of countries (particularly those post-communist Eastern European countries) would allow for a more thorough investigation of the universality of social support theory and the mechanisms through which social support works to suppress crime.

Though the present study is limited by a number of factors, the results presented herein offer hopeful, but equivocal, support for Cullen's social support theory, thereby warranting the attention of future research. The Eurostat archives have the potential to offer an invaluable resource for criminological scholars, especially as more complete data for a larger number of European regions and a greater number of time points become available. Scholars should monitor these archives and take advantage of future data expansions.

Evaluations of social support theory might also benefit from an integration of social justice concepts. As Cullen (1994) and Colvin, Cullen, and Vander Ven (2002) suggest, the manner in which social support is delivered and the manner in which social support is interpreted by the recipient are important factors to consider when evaluating the effectiveness of social support. While both Eastern and Western European countries have experienced a rather turbulent period of economic and social policy transitions during the last two decades, the neoliberal character of these transitions represents a sharp ideological shift from the socialist philosophies governing Eastern Europe prior to the fall of communism in 1989. Research investigating public perceptions of social justice in the wake of the post-communist transition finds that Eastern European publics are more likely than those of Western Europe to support highly egalitarian economic systems of rewards based on need (as opposed to merit) with high levels of government intervention and "prosocialist" ideologies incompatible with those of the newly imposed neoliberal systems, which have mandated the retrenchment of social welfare (Mason 1995:60;

Mason and Kluegel 2000). Closely related to this philosophical divergence, Eastern European publics are also found to exhibit significantly lower levels of overall life satisfaction and are more likely to indicate perceptions of economic injustice than their Western counterparts (Mason 1995; Mason and Kluegel 2000). As previously addressed, this general dissatisfaction and the remnants of social philosophies may condition the effect of officially delivered, instrumental social supports in the post-communist context. In addition to examination of social support theory over longer periods of time and using lagged homicide rates, then, future tests of social support theory should investigate the relationship between social support and the contexts within which it is delivered and received.

REFERENCES

- Allison, P. 2005. *Fixed Effects Regression for Longitudinal Data Using the SAS System*. Cary, NC: SAS Institute.
- Bryk, S. S. and S. W. Raudenbush. 1982. *Hierarchical Linear Models: Applications and Data Analysis Methods*. Newbury Park: Sage Publications, Inc.
- Chamlin, M. B., and J. K. Cochran. 1997. "Social Altruism and Crime." *Criminology* 35:203–228.
- Chamlin, M. B., K. J. Novak, C. T. Lowenkamp, and J. K. Cochran. 1999. "Social Altruism, Tax policy, and Crime: A Cautionary Tale." *Criminal Justice Policy Review* 10:429– 446.
- Colvin, M., F. T. Cullen, and T. Vander Ven. 2000. "Coercion, Social Support, and Crime: An Emerging Theoretical Consensus." *Criminology* 40:19-22.
- Cullen, F. T. (1994). "Social Support as an Organizing Concept for Criminology: Presidential address to the Academy of Criminal Justice Sciences." *Justice Quarterly* 11:527-559.
- DeFronzo, J. 1983. "Economic Assistance to Impoverished Americans: Relationship to Incidence of Crime." *Criminology* 21:119-136.
- DeFronzo, J. 1997. "Welfare and Homicide." *Journal of Research in Crime and Delinquency* 34:395-406.
- DeFronzo, J. and L. Hannon. 1998. "Welfare Assistance Levels and Homicide Rates." *Homicide Studies* 2:31-45.

- Esping-Andersen, G. 1996. "After the Golden Age? Welfare State Dilemmas in Global Economy." Pp. 1-31 in *Welfare States in Transition: National Adaptations in Global Economies*, ed. by G. Esping-Andersen. London: Sage Publications.
- Eurostat. 2004. *Urban Audit Methodological Handbook, 2nd Edition*. Luxembourg: Office for Official Publications of the European Communities.
- Eurostat. 2005. *European Regional and Urban Statistics: Reference Guide*. Luxembourg: Office for Official Publications of the European Communities.
- Gordon, R.A. 1968. "Issues in Multiple Regression." *American Journal of Sociology* 73:592-616.
- Harvey, D. 2005. *A Brief History of Neoliberalism*. New York: Oxford University Press.
- Horney, J., D. W. Osgood, and I. H. Marshall (1995). "Criminal Careers in the Short Term: Intra-Individual Variability in Crime and Its Relation to Local Life Circumstances." *American Sociological Review* 60:655-73.
- House, J. L. 1981. *Work Stress and Social Support*. Reading, MA: Addison-Wesley.
- Johnston, J. and J. DiNardo. 1997. *Analysis of Panel Data*. Cambridge: Cambridge University Press.
- Judge, G. G., W. E. Griffiths, R. Carter Hill, H. Lutkepohl, T-C. Lee. 1985. *The Theory and Practice of Econometrics*. NY: Wiley.
- Kim, S-W. and W. A. Pridemore. 2005. "Social Support and Homicide in Transitional Russia." *Journal of Criminal Justice* 33:561-572.

- Korenman, S. and J. E. Miller. 1997. "Effects of Long-term Poverty on Physical Health of Children in the National Longitudinal Survey of Youth." Pp. 70-99 in *Consequences of Growing Up Poor*, ed. by Duncan, G., and J. Brooks-Gunn. NY: Russell Sage Foundation.
- LaFree, G. 1999. "A Summary and Review of Cross-National Comparative Studies of Homicide." Pp. 125-145 in *Homicide: A Sourcebook of Social Research*, ed. by M. D. Smith and M. A. Zahn. Thousand Oaks: SAGE Publications.
- Land, K. C., P. L. McCall, and L. E. Cohen. 1990. "Structural Covariates of Homicide Rates: Are There Any Invariances across Time and Social Space?" *American Journal of Sociology* 95:922-963.
- Lin, N., M. Y. Dumin, and W. Woefel. 1986. "Measuring Community and Network Support." Pp. 153-170 in *Social Support, Life Events, and Depression*, ed. by N. Lin, A. Dean, and W. Ensel. Orlando: Academic Press.
- Mason, D. S. 1995. "Justice, Socialism, and Participation in the Postcommunist States." Pp. 49-80 in *Social Justice and Political Change: Public Opinion in Capitalist and Post-Communist States*, ed. by J. R. Kluegel, D. Mason, and B. Wegener. New York: Walter de Gruyter, Inc.
- Mason, D. S. and J. R. Kluegel. 2000. "Introduction: Public Opinion and Political Change in Postcommunist States." Pp. 1-25 in *Marketing Democracy: Changing Opinion about Inequality and Politics in East Central Europe*, ed. by D. S. Mason and J. R. Kluegel. Oxford, England: Rowman & Littlefield Publishers, Inc.

- Matsueda, R. L. 1992. "Reflected Appraisals, Parental Labeling, and Delinquency: Specifying a Symbolic Interactionist Theory." *American Journal of Sociology* 6:1577-1611.
- Messner, S. F., L. E. Raffalovich, G. M. Sutton. 2010. "Poverty, Infant Mortality, and Homicide Rates in Cross-National Perspective: Assessments of Criterion Validity and Construct Validity." *Criminology* 48:509-537.
- Messner, S. F. and R. Rosenfeld. 1997. "Political Restraint of the Market and Levels of Criminal Homicide: A Test of Institutional-Anomie Theory." *Social Forces* 75:1393-1416.
- Ousey, G. C. and P. Wilcox. 2007. "Interactions between Antisocial Propensity and Life-Course Varying Correlates of Delinquent Behavior: Differences by Method of Estimation and Implications for Theory." *Criminology* 45:401-442.
- Parker, K. F., P. L. McCall, and K. C. Land. 1999. "Determining Social-Structural Predictors of Homicide: Units of Analysis and Related Methodological Concerns." Pp. 107-124 in *Homicide: A Sourcebook of Social Research*, ed. by M. D. Smith and M. A. Zahn. Thousand Oaks: SAGE Publications.
- Phillips, J. A. 2006. "Explaining Discrepant Findings in Cross-Sectional and Longitudinal Analyses: An Application to U.S. Homicide Rates." *Social Science Research* 35:948-974.
- Phillips, J. A. and D. F. Greenberg. 2008. "A Comparison of Methods for Analyzing Criminological Panel Data." *Journal of Quantitative Criminology* 24:51-72.

- Pratt, T. C., and T. W. Godsey. 2002. "Social Support and Homicide: A Cross-national Test of an Emerging Criminological Theory." *Journal of Criminal Justice* 30:589–601.
- Pratt, T. C., and T. W. Godsey. 2003. "Social Support, Inequality, and Homicide: A Cross-National Test of an Integrated Theoretical Model." *Criminology* 41:611–643.
- Pridemore, W. A. 2008. "A Methodological Addition to the Cross-National Empirical Literature on Social Structure and Homicide: A First Test of the Poverty-Homicide Thesis." *Criminology* 46:133-154.
- Savolainen, J. 2000. "Inequality, Welfare State, and Homicide: Further Support for the Institutional Anomie Theory." *Criminology* 38:1021-1042.
- Stamatel, J. 2009. "Correlates of National-Level Homicide Variation in Post-Communist East-Central Europe." *Social Forces* 87:1424-1448.
- Standing, G. 1996. "Social Protection in Central and Eastern Europe: A Tale of Slipping Anchors and Torn Safety Nets." Pp. 225-255 in *Welfare States in Transition: National Adaptations in Global Economies*, ed. by G. Esping-Andersen. London: Sage Publications.
- Teachman, J. D., K. M. Pausch, R. D. Day, and K. P. Carver. 1997. "Poverty During Adolescence and Subsequent Educational Attainment." Pp. 382-418 in *Consequences of Growing Up Poor*, ed. by G. Duncan and J. Brooks-Gunn. NY: Russell Sage Foundation.

Vaux, A. 1988. *Social Support: Theory, Research, and Intervention*. New York: Praeger.

Table 1. Proportion of NUTS Level 2 Regions Represented

| | 1995 | 2000 | 2005 |
|--|-------|-------|-------|
| European Union countries | | | |
| Austria | 9/9 | 9/9 | 9/9 |
| Belgium | 11/11 | 5/11 | 0/11 |
| Bulgaria* | 0/6 | 0/6 | 0/6 |
| Czech Republic* | 0/8 | 8/8 | 8/8 |
| Denmark | 0/5 | 0/5 | 0/5 |
| Germany | 0/39 | 0/39 | 36/39 |
| Estonia* | 0/1 | 0/1 | 0/1 |
| Ireland | 0/2 | 1/2 | 1/2 |
| Greece | 13/13 | 13/13 | 13/13 |
| Spain | 0/19 | 0/19 | 19/19 |
| France | 22/26 | 26/26 | 22/26 |
| Italy | 19/21 | 21/21 | 0/21 |
| Cyprus | 0/1 | 0/1 | 0/1 |
| Latvia* | 0/1 | 0/1 | 0/1 |
| Lithuania* | 0/1 | 0/1 | 0/1 |
| Luxembourg | 0/1 | 0/1 | 0/1 |
| Hungary* | 0/7 | 7/7 | 7/7 |
| Malta | 0/1 | 0/1 | 0/1 |
| Netherlands | 12/12 | 12/12 | 12/12 |
| Poland* | 0/16 | 0/16 | 16/16 |
| Portugal | 4/7 | 0/7 | 7/7 |
| Romania* | 0/8 | 8/8 | 8/8 |
| Slovenia* | 0/2 | 0/2 | 0/2 |
| Slovakia* | 0/4 | 0/4 | 4/4 |
| Finland | 1/5 | 5/5 | 5/5 |
| Sweden | 6/8 | 8/8 | 8/8 |
| United Kingdom | 0/37 | 0/37 | 0/37 |
| Candidate countries | | | |
| Croatia | 0/3 | 0/3 | 0/3 |
| The former Yugoslav Republic of Macedonia* | 0/1 | 0/1 | 0/1 |
| Turkey* | 0/26 | 0/26 | 0/26 |
| EFTA countries | | | |
| Iceland | 0/1 | 0/1 | 0/1 |
| Norway | 0/7 | 0/7 | 0/7 |
| Switzerland | 0/7 | 0/7 | 0/7 |

Table 2. Descriptive Statistics for Regional Homicide Rates and Predictor Variables

| Variable | 1995 | 2000 | 2005 |
|---|--|--|--|
| Standardized homicide rate (per 100,000 population) | 1.038 [.856] (.1, 4.5) | 1.16 [.972] (.2, 6.3) | 1.165 [.871] (.2, 6.5) |
| Logged homicide rate | -.229 [.74] (-2.3, 1.5) | -.110 [.701] (-1.90, 1.84) | -.053 [.62] (-1.61, 1.87) |
| Social support (in thousands of Euros per capita) | 2.63 [1.35] (.092, 5.21) | 3.08 [1.66] (.061, 5.72) | 4.06 [1.97] (.196, 6.84) |
| Population structure index | 18.833 [1.865] (12.94, 23.81) | 19.005 [1.825] (12.69, 23.88) | 18.881 [1.712] (13.05, 23.28) |
| Infant mortality | 7.116 [3.798] (2.4, 27.5) | 5.953 [3.214] (2, 22.23) | 4.615 [2.563] (0, 16.25) |
| Percentage aged 65 and over | 14.8 [2.588] (8.6, 23.02) | 15.721 [2.953] (3.82, 24.96) | 16.319 [3.019] (3.71, 23.03) |
| Index components | | | |
| Population size | 1,753,400 [1,423,880] (25,158, 10,858,975) | 1,747,400 [1,431,030] (25,706, 11,020,246) | 1,763,700 [1,468,910] (26,530, 11,399,319) |
| Population density | 324.6 [833.2] (1.8, 8324.6) | 339.1 [812.7] (2, 8494.2) | 286.4 [677.4] (2.4, 6290.5) |
| <i>n</i> (listwise) | 97 | 124 | 176 |

Note: Means, standard deviation [in brackets], ranges (in parentheses)

Table 3a. Correlations between Variables (1995)

| | 1 | 2 | 3 | 4 | 5 |
|--------------------------|--------|--------|--------|--------|------|
| (1) Logged homicide rate | 1.00 | | | | |
| (2) Social Support | .055 | 1.00 | | | |
| (3) Population Structure | -.052 | .037 | 1.00 | | |
| (4) Infant Mortality | .463* | -.666* | .057 | 1.00 | |
| (5) Percent Over 65 | -.329* | -.021 | -.229* | -.270* | 1.00 |

*p < .01

Table 3b. Correlations between Variables (2000)

| | 1 | 2 | 3 | 4 | 5 |
|--------------------------|--------|--------|-------|--------|------|
| (1) Logged homicide rate | 1.00 | | | | |
| (2) Social Support | -.489* | 1.00 | | | |
| (3) Population Structure | -.129 | .181* | 1.00 | | |
| (4) Infant Mortality | .475* | -.545* | .081 | 1.00 | |
| (5) Percent Over 65 | -.456* | .390* | -.022 | -.345* | 1.00 |

*p < .01

Table 3c. Correlations between Variables (2005)

| | 1 | 2 | 3 | 4 | 5 |
|--------------------------|--------|--------|-------|--------|------|
| (1) Logged homicide rate | 1.00 | | | | |
| (2) Social Support | -.514* | 1.00 | | | |
| (3) Population Structure | -.043 | .088 | 1.00 | | |
| (4) Infant Mortality | .530* | -.529* | .075 | 1.00 | |
| (5) Percent Over 65 | -.345* | .434* | -.065 | -.304* | 1.00 |

*p < .01

Table 4. Random Intercept Models Predicting Homicide

| | 1995-2005 | | | 2000-2005 | | |
|----------------------------------|------------------------|-------------------------------|---------------------------------|------------------------|-------------------------------|---------------------------------|
| | Model 1: Full Model | Model 2: Social Support | Model 3: Infant Mortality | Model 4: Full Model | Model 5: Social Support | Model 6: Infant Mortality |
| Between-Region Predictors | | | | | | |
| Social support | -.018 (.027) | -.099* (.024) | | -.056* (.027) | -.129* (.022) | |
| Infant mortality | .082* (.015) | | .102* (.012) | .074* (.015) | | .100* (.012) |
| Population structure | -.040 (.015) | -.024 (.022) | -.038* (.0196) | -.023 (.0213) | -.012 (.022) | -.024 (.020) |
| Percent 65 years and over | -.056* (.014) | -.077* (.014) | -.063* (.013) | -.0369* (.014) | -.056* (.014) | -.044* (.013) |
| Within-Region Predictors | | | | | | |
| Social support | -.078 (.092) | -.086 (.080) | | -.087 (.092) | -.051 (.084) | |
| Infant Mortality | .012 (.029) | | .041 (.025) | .017 (.028) | | .020 (.026) |
| Population Structure | -.113 (.501) | -.240 (.468) | .205 (.458) | .242 (.662) | .138 (.600) | .310 (.517) |
| Percent 65 years and over | .001 (.022) | .011* (.020) | .010 (.021) | -.040 (.044) | -.005 (.029) | -.040 (.039) |
| R2 (between-region) | .365 | .272 | .378 | .371 | .286 | .372 |
| R2 (within-region) | .124 | .122 | .104 | .148 | .151 | .111 |

Note: *p<.05

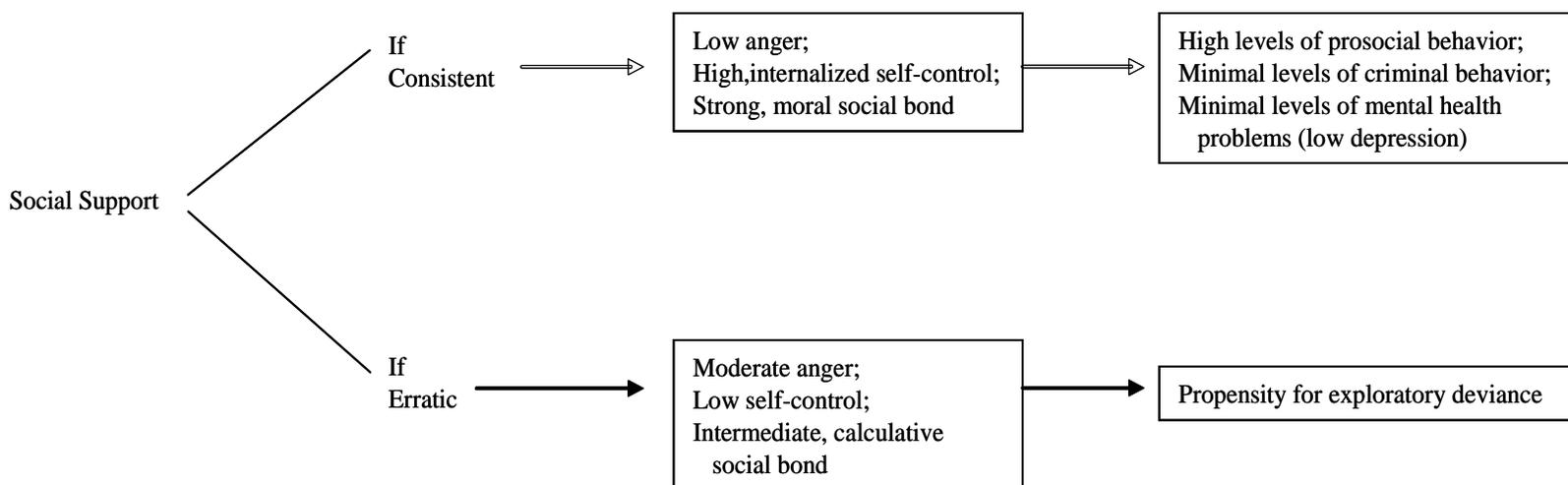


Figure 1. Model of Social Support Theory as Posited by Colvin, Cullen, and Vander Ven (2002)

Adapted from Figure 1 in Colvin, M., F. T. Cullen, and T. Vander Ven (2000). "Coercion, Social Support, and Crime: An Emerging Theoretical Consensus." *Criminology* 40:19-22.

APPENDICES

APPENDIX A

Propositions Outlining Cullen's (1994) Social Support Theory

The Ecology of Social Support:

1. America has higher rates of serious crime than other industrialized nations because it is a less supportive society.
Corollary:
The more a society is deficient in the support needed, the higher its crime rate will be.
2. The less social support there is in a community, the higher the crime rate will be.

Support and Crime

3. The more support a family provides, the less likely it is that a person will engage in crime.
Corollary:
 1. The more support is given to families, the less crime will occur.
 2. Changes in levels of support for and by families have contributed since the 1960s to increases in crime and to the concentration of serious violence in high-risk inner-city neighborhoods.
4. The more social support in person's social network, the less crime will occur.
5. Social support lessens the effects of exposure to criminogenic strains.
6. Across the life cycle, social support increases the likelihood that offenders will turn away from a criminal pathway.
7. Anticipation of a lack of social support increases criminal involvement.
8. Giving social support lessens involvement in crime.
9. Crime is less likely when social support for conformity exceeds social support for crime.
Corollary:
Social support from conformist sources is most likely to reduce criminal involvement.

Support and Control

10. Social support often is a precondition for effective social control.
11. A supportive correctional system lessens crime.
12. Social support leads to more effective policing.
13. Social support lessens criminal victimization.
Corollary:
A more supportive society reduces exposure to victimization.
14. Social support lessens the pains of criminal victimization.

Table adapted from: Cullen, F. T. 1994. "Social Support as an Organizing Concept for Criminology: Presidential Address to the Academy of Criminal Justice Sciences." *Justice Quarterly* 11:527-559.

 Appendix B. Representation of European Union NUTS Level 2 Regions in Data Set

| | 1995 | 2000 | 2005 |
|---|------|------|------|
| European Union countries | | | |
| Austria | | | |
| Burgenland | x | x | x |
| Niederösterreich | x | x | x |
| Wien | x | x | x |
| Kärnten | x | x | x |
| Steiermark | x | x | x |
| Oberösterreich | x | x | x |
| Salzburg | x | x | x |
| Tirol | x | x | x |
| Vorarlberg | x | x | x |
| Belguim | | | |
| Région de Bruxelles-Capitale/ Brussels Hoofdstedelijk Gewest | x | | |
| Prov. Antwerpen | x | x | |
| Prov. Limburg (B) | x | x | |
| Prov. Oost-Vlaanderen | x | x | |
| Prov. Vlaams-Brabant | x | x | |
| Prov. West-Vlaanderen | x | x | |
| Prov. Brabant Wallon | x | | |
| Prov. Hainaut | x | | |
| Prov. Liege | x | | |
| Prov. Luxembourg (B) | x | | |
| Prov. Namur | x | | |
| Bulgaria* | | | |
| Severozapaden | | | |
| Severen tsentralen | | | |
| Severoiztochen | | | |
| Yugoiztochen | | | |
| Yugozapaden | | | |
| Yuzhen tsentralen | | | |
| Cyprus | | | |
| Kypros/Kibris | | | |

| | | | |
|------------------------|---|---|---|
| Czech Republic* | | | |
| Praha | | X | X |
| Střední Čechy | | X | X |
| Jihozápad | | X | X |
| Severozápad | | X | X |
| Severovýchod | | X | X |
| Jihovýchod | | X | X |
| Střední Morava | | X | X |
| Moravskoslezsko | | X | X |
| Denmark | | | |
| Hovedstaden | | | |
| Sjælland | | | |
| Syddanmark | | | |
| Midtjylland | | | |
| Nordjylland | | | |
| Estonia* | | | |
| Eesti | | | |
| Finland | | | |
| Itä-Suomi | X | X | X |
| Etelä-Suomi | | X | X |
| Länsi-Suomi | | X | X |
| Pohjois-Suomi | | X | X |
| Aland | | X | X |
| France | | | |
| Île-de-France | X | X | X |
| Champagne-Ardenne | X | X | X |
| Picardie | X | X | X |
| Haute-Normandie | X | X | X |
| Centre | X | X | X |
| Basse-Normandie | X | X | X |
| Bourgogne | X | X | X |
| Nord – Pas-de-Calais | X | X | X |
| Lorraine | X | X | X |
| Alsace | X | X | X |
| Franche-Comté | X | X | X |

| | | | |
|----------------------------|---|---|---|
| Pays de la Loire | x | x | x |
| Bretagne | x | x | x |
| Poitou-Charentes | x | x | x |
| Aquitaine | x | x | x |
| Midi-Pyrénées | x | x | x |
| Limousin | x | x | x |
| Rhône-Alpes | x | x | x |
| Auvergne | x | x | x |
| Languedoc-Roussillon | x | x | x |
| Provence-Alpes-Côte d'Azur | x | x | x |
| Corse | x | x | x |
| Guadeloupe | | x | |
| Martinique | | x | |
| Guyane | | x | |
| Réunion | | x | |
| Germany | | | |
| Stuttgart | | | x |
| Karlsruhe | | | x |
| Freiburg | | | x |
| Tübingen | | | x |
| Oberbayern | | | x |
| Niederbayern | | | x |
| Oberpfalz | | | x |
| Oberfranken | | | x |
| Mittelfranken | | | x |
| Unterfranken | | | x |
| Schwaben | | | x |
| Berlin | | | x |
| Brandenburg — Nordost | | | |
| Brandenburg — Südwest | | | |
| Bremen | | | x |
| Hamburg | | | x |
| Darmstadt | | | x |
| Gießen | | | x |
| Kassel | | | x |
| Mecklenburg-Vorpommern | | | x |
| Braunschweig | | | x |
| Hannover | | | x |
| Lüneburg | | | x |

| | | | |
|------------------------------|---|---|---|
| Weser-Ems | | | X |
| Düsseldorf | | | X |
| Köln | | | X |
| Münster | | | X |
| Detmold | | | X |
| Arnsberg | | | X |
| Koblenz | | | X |
| Trier | | | X |
| Rheinhessen-Pfalz | | | X |
| Saarland | | | X |
| Chemnitz | | | X |
| Dresden | | | X |
| Leipzig | | | X |
| Sachsen-Anhalt | | | |
| Schleswig-Holstein | | | X |
| Thüringen | | | X |
| Greece | | | |
| Anatoliki Makedonia, Th raki | X | X | X |
| Kentriki Makedonia | X | X | X |
| Dytiki Makedonia | X | X | X |
| Thessalia | X | X | X |
| Ipeiros | X | X | X |
| Ionia Nisia | X | X | X |
| Dytiki Ellada | X | X | X |
| Sterea Ellada | X | X | X |
| Peloponnisos | X | X | X |
| Attiki | X | X | X |
| Voreio Aigaio | X | X | X |
| Notio Aigaio | X | X | X |
| Kriti | X | X | X |
| Hungary* | | | |
| Közép-Magyarország | | X | X |
| Közép-Dunántúl | | X | X |
| Nyugat-Dunántúl | | X | X |
| Dél-Dunántúl | | X | X |
| Észak-Magyarország | | X | X |
| Észak-Alföld | | X | X |
| Dél-Alföld | | X | X |

| | | |
|--------------------------------------|---|---|
| Ireland | | |
| Border, Midland and Western | | x |
| Southern and Eastern | | x |
| Italy | | |
| Piemonte | x | x |
| Valle d' Aosta/Vallée d' Aoste | x | x |
| Liguria | x | x |
| Lombardia | x | x |
| Provincia Autonoma Bolzano/ Bozen | | x |
| Provincia Autonoma Trento | | x |
| Veneto | x | x |
| Friuli-Venezia Giulia | x | x |
| Emilia-Romagna | x | x |
| Toscana | x | x |
| Umbria | x | x |
| Marche | x | x |
| Lazio | x | x |
| Abruzzo | x | x |
| Molise | x | x |
| Campania | x | x |
| Puglia | x | x |
| Basilicata | x | x |
| Calabria | x | x |
| Sicilia | x | x |
| Sardegna | x | x |
| Latvia* | | |
| Latvija | | |
| Lithuania* | | |
| Lietuva | | |
| Luxembourg | | |
| Luxembourg (Grand-Duché) | | |
| Malta | | |
| Malta | | |

| | | | |
|---------------------|---|---|---|
| Netherlands | | | |
| Groningen | x | x | x |
| Friesland (NL) | x | x | x |
| Drenthe | x | x | x |
| Overijssel | x | x | x |
| Gelderland | x | x | x |
| Flevoland | x | x | x |
| Utrecht | x | x | x |
| Noord-Holland | x | x | x |
| Zuid-Holland | x | x | x |
| Zeeland | x | x | x |
| Noord-Brabant | x | x | x |
| Limburg (NL) | x | x | x |
| Poland* | | | |
| Łódzkie | | | x |
| Mazowieckie | | | x |
| Małopolskie | | | x |
| Śląskie | | | x |
| Lubelskie | | | x |
| Podkarpackie | | | x |
| Świętokrzyskie | | | x |
| Podlaskie | | | x |
| Wielkopolskie | | | x |
| Zachodniopomorskie | | | x |
| Lubuskie | | | x |
| Dolnośląskie | | | x |
| Opolskie | | | x |
| Kujawsko-Pomorskie | | | x |
| Warmińsko-Mazurskie | | | x |
| Pomorskie | | | x |
| Portugal | | | |
| Norte | x | | x |
| Algarve | x | | x |
| Centro (P) | | | x |
| Lisboa | | | x |
| Alentejo | | | x |

| | | | |
|----------------------------|---|---|---|
| Regiao Autónoma dos Açores | x | | x |
| Regiao Autónoma da Madeira | x | | x |
| Romania* | | x | x |
| Nord-Vest | | x | x |
| Centru | | x | x |
| Nord-Est | | x | x |
| Sud-Est | | x | x |
| Sud — Muntenia | | x | x |
| Bucureşti — Ilfov | | x | x |
| Sud-Vest Oltenia | | x | x |
| Vest | | x | x |
| Slovenia* | | | |
| Vzhodna Slovenija | | | |
| Zahodna Slovenija | | | |
| Slovakia* | | | |
| Bratislavský kraj | | | x |
| Západné Slovensko | | | x |
| Stredné Slovensko | | | x |
| Východné Slovensko | | | x |
| Spain | | | |
| Galicia | | | x |
| Principado de Asturias | | | x |
| Cantabria | | | x |
| País Vasco | | | x |
| Comunidad Foral de Navarra | | | x |
| La Rioja | | | x |
| Aragón | | | x |
| Comunidad de Madrid | | | x |
| Castilla y León | | | x |
| Castilla-La Mancha | | | x |
| Extremadura | | | x |
| Cataluna | | | x |
| Comunidad Valenciana | | | x |
| Illes Balears | | | x |
| Andalucía | | | x |
| Región de Murcia | | | x |

| | | | |
|--|---|---|---|
| Ciudad Autónoma de Ceuta | | | X |
| Ciudad Autónoma de Melilla | | | X |
| Canarias | | | X |
| Sweden | | | |
| Stockholm | X | X | X |
| Östra Mellansverige | X | X | X |
| Smaland med öarna | | X | X |
| Sydsverige | X | X | X |
| Västsverige | | X | X |
| Norra Mellansverige | X | X | X |
| Mellersta Norrland | X | X | X |
| Övre Norrland | X | X | X |
| United Kingdom | | | |
| Tees Valley and Durham | | | |
| Northumberland and Tyne and Wear | | | |
| Cumbria | | | |
| Cheshire | | | |
| Greater Manchester | | | |
| Lancashire | | | |
| Merseyside | | | |
| East Yorkshire and Northern Lincolnshire | | | |
| North Yorkshire | | | |
| South Yorkshire | | | |
| West Yorkshire | | | |
| Derbyshire and Nottinghamshire | | | |
| Leicestershire, Rutland and Northamptonshire | | | |
| Lincolnshire | | | |
| Herefordshire, Worcestershire and Warwickshire | | | |
| Shropshire and Staffordshire | | | |
| West Midlands | | | |
| East Anglia | | | |
| Bedfordshire and Hertfordshire | | | |
| Essex | | | |
| Inner London | | | |
| Outer London | | | |

Berkshire, Buckinghamshire
and Oxfordshire
Surrey, East and West Sussex
Hampshire and Isle of Wight
Kent
Gloucestershire, Wiltshire and
Bristol/Bath area
Dorset and Somerset
Cornwall and Isles of Scilly
Devon
West Wales and the Valleys
East Wales
Eastern Scotland
South Western Scotland
North Eastern Scotland
Highlands and Islands
Northern Ireland

Candidate countries

Croatia

Sjeverozapadna Hrvatska
Središnja i Istočna (Panonska)
Hrvatska
Jadranska Hrvatska

The former Yugoslav Republic of Macedonia*

Poranešna jugoslovenska
Republika Makedonija

Turkey*

İstanbul
Tekirdağ
Balıkesir
İzmir
Aydın
Manisa
Bursa
Kocaeli
Ankara

Konya
Antalya
Adana
Hatay
Kırıkkale
Kayseri
Zonguldak
Kastamonu
Samsun
Trabzon
Erzurum
Ağrı
Malatya
Van
Gaziantep
Şanlıurfa
Mardin

EFTA countries

Iceland
Ísland

Norway
Oslo og Akershus
Hedmark og Oppland
Sor-Ostlandet
Agder og Rogaland
Vestlandet
Trondelag
Nord-Norge

Switzerland
Région lémanique
Espace Mittelland
Nordwestschweiz
Zürich
Ostschweiz
Zentralschweiz
Ticino

|

|

|