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Working Paper

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CREMA Working Paper, No. 2009-23

Provided in Cooperation with:
CREMA - Center for Research in Economics, Management and the Arts, Zürich

Suggested Citation: Gächter, Martin; Savage, David A.; Torgler, Benno (2009) : The Relationship between Stress and Social Capital among Police Officers, CREMA Working Paper, No. 2009-23, Center for Research in Economics, Management and the Arts (CREMA), Basel

This Version is available at:
https://hdl.handle.net/10419/214450

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Working Paper No. 2009 - 23

CREMA Gellertstrasse 18 CH - 4052 Basel www.crema-research.ch

The Relationship between Stress and Social Capital among Police Officers

by

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The Relationship between Stress and Social Capital among Police Officers

Abstract

This paper analyzes the effectiveness of social capital in reducing the negative externalities associated with stress, as well as the physical and psychological indicators of stress among police officers. Despite the fact that there is a large multidisciplinary literature on stress or on social capital, the link between both factors is still underexplored. In this empirical paper we therefore aim at reducing such a shortcoming. We focus on a strategically important work environment, namely law enforcement agents, that is not only characterized as physically and emotionally demanding, but also as an essential part for a well-functioning society due to the fact that inefficiencies in the police force can induce large negative externalities. Using a multivariate regression analysis focusing on nine different proxies for stress and two proxies for social capital and conducting several robustness checks, we find strong evidence that an increased level of social capital is correlated with a lower level of stress. From a policy perspective, our findings suggest that stress reduction programs should actively engage employees to build stronger social networks.

Keywords: Social Capital; Trust; Stress; Police Officers.

JEL Codes: I1, I310, J24, J81, Z130.

I. INTRODUCTION

The concept of stress has become so inexorably linked to that of modern society that the topic is researched and discussed across a diverse range of fields including: economics, social psychology, sociology, management, and in particular also health and medicine. The economic costs of the negative externalities generated by stress are considerable. This not only includes the cost of administering mental and physical support for sufferers but also the lost work hours. International Labor Organization (ILO) reports estimate that in the US, between US$30-$44 billion is spent on treating depression and that one in ten workers are diagnosed with depression, resulting in approximately 200 million lost working days each year (Gabriel & Liimatainen, 2000). In many countries, mental health issues have grown so much that they are becoming the most common reason for allocating disability pensions. The research literature shows that a significant proportion of these cases of mental and physical illness can be attributed to stress. However, the costs associated with stress are not just limited to the individual. In fact employers suffer from low productivity, high staff turnover (which increases recruitment and training costs) and reduced profit margins (Gabriel & Liimatainen, 2000). Once individuals leave the private sector, government costs begin with additional health care costs, lower numbers of taxable workers and lower national productivity.

Public service workers, like police officers, have jobs that are recognized as suffering from high levels of stress through performing work that is both physically and emotionally draining (Kopel & Friedman, 1999; Schwartz & Schwartz, 1981; Stotland, 1991). Numerous research studies have demonstrated that the high levels of stress in these professions can lead to detrimental health consequences. These consequences can include mental and physical illnesses; aggressive and violent behavior; alcohol abuse and decreased work performance (Morash & Haarr; 1995;

McCarty, Zhao & Garland 2007; Swatt, Gibson, & Piquero, 2007). Although the literature on stress has explored a large set of factors that determine stress, the examination of whether social capital has an effect on stress is still to our knowledge an underdeveloped topic. We stress that greater levels of social capital should alleviate work stress levels and in this paper we explore this relationship within police officers using an interesting survey data set conducted with police officers of the Baltimore Police Department in Maryland, USA (Gershon, 1999, 2000). The survey covers many job related factors (both positive and negative), as well as personal, organisational and social questions. The sample resembles the demographic characteristics of the police department due to well developed sampling strategies and a very high response rate. From a theoretical and empirical perspective it helps to work with data where individuals have a similar job profile, where therefore many of the potential stress factors are common across a large group of individuals. Remaining differences within the homogenous environment can then be controlled as good as possible in a multivariate analysis. Thus, in other words, the advantage of focusing on a particular profession such as police officers within a regional department is the chance of improving the ceteris paribus assumption, holding important potential factors constant. For example, environmental factors are better controlled or isolated compared to the case where individuals within a survey have heterogeneous job profiles and are acting in different environments (noisy stress comparison). Brown and Campbell (1990) already stressed that "empirical evidence is somewhat scant in providing a systematic account of those aspects of a job which are stressful or the impact that these have on police officers. In practical terms this makes designing successful interventions difficult in both identifying type of intervention and targeting appropriate recipients" (p. 305).

Searching for improvements for law enforcers can generate large society benefits. Social capital might be a good alternative in situations where common stress reducing instruments fail or where the necessary information to design and enforce suitable instruments and directives cannot effectively be used. Coleman (1988, p. 304) points out that social capital works by "facilitating the achievement of goals that could not be achieved in its absence or could be achieved only at higher cost".

The paper is structured as followed. Section two briefly reviews the theoretical background of our paper by explaining major concepts of stress and social capital on the basis of related literature. Section three explains our dataset as well as the methods applied. Section four presents our main empirical results, which are discussed in section five. Finally, section six draws some conclusions and policy implications.

II. THEORETICAL BACKGROUND

A general definition of stress covers conditions of a physical, biological or psychological nature that strain an organism beyond its power to adapt. Psychological and sociological literature has identified numerous factors associated with stress, which include: work and time pressures, auditory overload and interference, performance pressure, environmental, fatigue, extreme heavy or prolonged workloads and social pressures (Cannon-Bowers & Salas, 1998; Bourne & Yaroush, 2003). Research has identified several of the coping mechanisms utilized by police officers to alleviate stress, with positive and negative outcomes such as: social and spiritual support systems, alcohol and substance abuse, and violence (Haarr & Morash, 1999; Swatt, Gibson, & Piquero, 2007; Gershon et al., 2009). Police officers are exposed to a vast array of

these stresses as a routine part of the job. Stresses can be classified by the frequency by which they occur as well as the intensity of the impact on the officer (Brown, Fielding & Grover, 1999). Many police stressors are comparable to other work environments due to workplace issues that are driven by the organizational structure, social interactions, and job requirements (e.g., shift work, excessive overtime, heavy workload, discrimination and harassment, poor working conditions, strong interactions with the public). In addition, police officers can encounter, witness or hear about fellow officers' involvement in extreme situations such as physical or even life threatening danger and the exposure to disturbing events in general (Gershon et al., 2009). Therefore, analyzing police officers can generate some interesting new insights. Certainly, major incidents such as shootings, attachment to the victim, or the attendance of a gruesome crime scene, are low-frequency events, but can have a very high stress impact. This type of stress impact has known to be triggers for mental disorders like Post Traumatic Stress Disorder (PTSD) (Stephens, Long & Miller, 1997). The more frequent but low-impact events are viewed as routine in this aspect. However, there is still a certain probability that an extreme event could happen. These events can affect officers in several ways, either physically, psychologically or both (Gershon, 2000). Some of the noted physical problems associated with police stress include: hypertension, stroke, ulcers, high blood pressure, or sexual dysfunction (Bartollas & Hahn, 1999; Berkman & Syme, 1979; Kroes, 1985; Mitchell & Bray, 1990; Peak, 1993; Stratton, 1984; Violanti, Marshall, & Howe, 1983). The psychological problems associated with police stress can include: depression, PTSD, burnout, suicide and alcoholism (Kawachi, Colditz, & Ascherio, 1996; Kopel & Friedman, 1999; Schaufeli & Enzmann, 1998; Schwartz & Schwartz, 1981; Stephens, Long, & Miller, 1997).

In this paper we stress that it might be interesting to explore the relationship between social capital and stress. We propose that a better stock of social capital can reduce stress levels at the individual level, and therefore potentially contributing to an improvement of law enforcement efficacy which generates positive spillovers at the aggregated level for the public. Game theory and experimental findings have emphasized or shown that a high level of social capital enables co-operation between actors and facilitates superior social outcomes (Boix & Posner, 1998). Social capital within a work environment may be a breeding ground for social stability among workers. That is, a lower level of stress is generated if trust and cooperation is established between co-workers and units. If, for example, new or potential challenges must be tackled, police officers or unit environments with a higher level social capital are more flexible in coping or adapting to such circumstances. In addition, social capital may reduce polarization within the unit and enhance social cohesion which may reduce transaction costs. According to Dasgupta (1999), social capital can lead to more efficient transactions by giving agents access to more information, enabling them to coordinate activities for mutual benefit, and, through frequent transactions with the same person, reducing therefore the likelihood of opportunistic behavior. It has also been suggested that low levels of social capital exacerbate these problems, as lack of social capital indicated a predisposition for depression (Brown & Harris, 1978; Caplan, 1974). More recent studies have shown that social capital, in the form of social support buffers individuals against both chronic and acute forms of stress (Cohen & Willis, 1985; Prince, Harwood, Blizard, Thomas, & Mann, 1997; Whitley & McKenzie, 2005). This is related to the literature on social environment that stresses that supportive, non-conflictual social relations at work can reduce stress and enhance health meeting basic human needs such as approval, affiliation, and a sense of belonging (Repetti, 1993). Thus, social capital is a resource that police

officers can draw upon in their personal and professional lives which should help them to deal with stressful situations. Many authors have singled out social capital as an important feature of productive social relationships (Gambetta, 1988; Hardin, 1993) and effective leadership facilitating also coordinated actions and the willingness to comply (see, e.g., Putnam, 1993; Alesina & La Ferrara, 2002; Knack and Keefer, 1997, La Porta et al., 1999; Knack, 1999; Zak & Knack, 2001; Schaltegger & Torgler, 2007; Torgler, 2007).

Now how can we measure social capital? We are interested not only in an analytical concept but also in an empirical one. Grootaert (2001, pp. 10-11) stresses that there are three major views on social capital: First, the concept developed by Putnam (1993) interpreting social capital as a social network, as networks of civic engagement facilitating coordination and cooperation. Second, Coleman's (1988, p. 598) approach that defines social capital as "a variety of different entities" that consists of social structure aspects, that also facilitate certain actions. This allows taking into account not only horizontal (co-worker) but also vertical social relationships (police officers with different rankings). The third concept considers the social and political environment that enforces norms and shapes social structures. In our case we have the chance to hold such an environment constant as we observe police officers within the same environment.

Social capital is therefore used to describe aspects of social networks, relationships and trust (Coleman, 1988; Fukuyama, 2003; Portes, 1998; Woolcock & Narayan, 2000). Putnam's (1983) 5 principles include: a local/civic identity, a sense of belonging, solidarity, and/or equality with other members of the community, and reciprocity and norms of cooperation inducing a sense of obligation to help others, along with a confidence that such assistance will be returned (Putnam, 1993). Similarly, Paldam (2000, p. 630), describes three families of social capital concepts: trust (cognitive social capital), cooperation (collective action) and networks. He points out that these

conceptual families come together because “most people build *trust* in and *networks* to others and come to *cooperate* with them” (p. 629). Paldam’s view is in line with our rationale for working with the following two proxies for social capital, namely whether “there is a good and effective cooperation between units” and whether one “can trust his/her work partner”. The trust variable that we use can be classified according to Uslaner (2002) as particularized (or personal) trust, a proxy that relies strongly upon experiences. Particularized trust is only related to a specific group such as co-workers, family members, or to specific institutions. Trust is then often connected with the element of reciprocity or interactions depending upon specific individual or group characteristics. This notion is essential for our analysis as we are exploring the work environment and its implication on individuals’ stress level. Good effective managerial behavior is crucial to the formation of social capital in a workplace, such that a well organized workplace fosters an environment of trust between all members of staff (Hodson, 2005). Thus, one could stress that social capital within any workplace is important but the special nature of police work similar to the military makes trust, reciprocity and cooperation between colleagues even more vital (Torgler, 2003), also partially to be able to handle extreme pressure situations. This has been shown in studies of individual contribution to social capital (Adler & Kwon, 2002; Leana & Van Buren, 1999). There is numerous works that demonstrate that higher levels of social support decreases stress effects for police officers (Dignam, Barrera, & West, 1986; Etzion, 1984; Graf, 1986; LaRocco, House, & French, 1980; Morash, Haarr, & Kwak, 2006; Morris, Shinn, & DuMont, 1999).

III. METHOD

The data for our analysis are taken from the study “SHIELDS” (Study to Help Identify, Evaluate and Limit Department Stress) in Baltimore, Maryland (see Gershon, 1999, 2000) which aimed to examine questions about the relationship between police stress and domestic violence in police families. The questionnaire covers questions in four main areas: (1) symptoms of stress and likely stressors, (2) perceived (current) stress, (3) coping strategies and (4) health outcomes. Study participants were recruited from the Baltimore Police Department in Baltimore which provides law enforcement services to about 700,000 inhabitants in Maryland. The five-page questionnaire was administered to a sample of 1,104 police officers and was aimed at a tenth-grade literacy level, taking approximately twenty minutes to complete. Due to the well developed sampling strategies, the sample closely resembles the demographic characteristics of the police department in 1996. At that time, the department had 3,061 sworn employees, including 2,636 males (86%) and 425 females (14%). Thus, the sample covers roughly a third of the whole study population. The response rate which was calculated by the number returned by each precinct compared with the average number of sworn employees at each precinct on the day of the survey, was very high amounting to 68% (Gershon, 1999). From approximately 1,200 questionnaires distributed 1,104 were returned (more than 92%).The very high response rate, the excellent sampling strategies and the anonymous nature of the study makes it very interesting to analyse such a data set. Table 1 presents an overview of the data set. Almost 86% of the employees are male. Regarding the ethnic group, a majority is Caucasian (64%), followed by African-American (33%) and Hispanic (1%). Considering the joint distribution of gender and ethnic groups in a cross table, 59% were Caucasian men, followed by 23% African-American men, 9% African-American women and 5% Caucasian women. Approximately 26% attended

college, while just about 4% hold a graduate degree. The main position was officer (55%), followed by detective and sergeant (13% each). A large majority of employees was either married or had a live-in partner (68%), while 19% declared themselves as singles. The mean age was 36 years, ranging from 20 to 66. On average, people have been working in the department for 11.5 years (lasting from 0 to 44) and have 1.18 children living at home (varying between 0 and 7).

The construction of our measures for stress that we are going to use as dependent variables as well as our key social capital variables follows in the next subsection.

(Table 1 about here)

Methods

For the purpose of this study, several indices were constructed to measure different aspects of stress. Moreover, to better isolate the impact of social capital on stress we control for factors such as demographic characteristics (age, gender, ethnic group, number of children, marital status), as well as experience and rank within the department as some previous studies report that rank and experience is relevant (for an overview see Brown and Campbell 1990). To check the robustness of the results we are also conducting a sensitivity analysis extending a baseline specification first with a strain index (Table 3) that measures whether police officers have experienced certain potentially dangerous or traumatic events in the line of duty and how much they were emotionally affected by them, and then an index that measures police officers' stability at home (Table 4).

We are now introducing the key variables of the baseline specifications. For simplicity and comparability we will use the same independent variables for all the nine stress proxies used as dependent variables.

Dependent variables

To measure different kinds, aspects and outcomes of stress in order to be able to distinguish between certain effects and their specific influences on stress we construct nine different indices of stress. Using a large set of dependent variables also offers a good robustness test for the relationship between social capital and stress. Following Kurtz (2008, p. 224), we develop indices of psychological and physical stress as well as an index which combines these two factors. Regarding the first index (psychological stress, referred to as *stress1*), participants were asked if they experienced the following signs of psychological stress in the past 6 months: restlessness, feeling hopeless, panic attacks, irritability, withdrawal, depression, and emotional depletion. A four-point Likert scale (Likert, 1932) with possible answers ranging from never (1) to always (4) was used. These items were then used to create a summative scale that ranged from 7 to 28, with higher levels indicating a higher level of (psychological) stress. The measure showed a satisfactory level of internal consistency (Cronbach's α= 0.83). The physical stress index (referred to as *stress2*) uses five questions assessing whether respondents had experienced nausea, trouble getting breath, a lump in the throat, pains or pounding in the chest, and faintness or dizziness in the 6 months prior to the survey. As the construction of the index is similar as explained above, the summative scale ranged from 5 to 20, with higher levels indicating a higher level of (physical) stress (α=0.72). Our third stress indicator (*stress3*) combines the psychological and physical components and, therefore, gives an overall indicator of perceived stress ranging from 12 to 48 (α=0.86).

In their paper about the effects of gender and race in police stress, following the Brief Symptom Inventory (BSI), which was developed in 1975 to measure nine dimensions of psychological and physical symptoms of stress among community residents as well as psychiatric and medical patients (see Derogatis & Savitz, 1999), He et al. (2005, p. 539) propose three different dimensions of stress: first, somatisation reflecting the psychological distress arising from perception of bodily dysfunction; second, anxiety representing general indicators such as restlessness, nervousness, and panic attacks; and finally, depression measuring a broad range of the elements constituting the clinical depressive syndrome. Thus, following their approach, we construct three indices, namely the somatisation index, the anxiety index and the depression index. The somatisation index consists of five questions asking about headaches, pains or pounding in the chest, nausea, trouble getting breath and a lump in the throat (*som*). As above, the four-point scale of distress ranges from never (1) to always (4). Thus, the index strongly resembles the physical index introduced above and ranges from 5 to 20 (α=0.72). Similarly, the anxiety index (*anx*) is somehow alike the psychological index. The index considers questions about restlessness, panic, being scared for no reason, feeling of being trapped or caught and irritability, again ranging from 5 to 20 (α=0.70). Finally, the depression index (*dep*) – following the symptoms of the clinical depressive syndrome – included withdrawal of interest in activities, depression, hopelessness, lack of interest and thoughts of ending the life. As it covers 5 questions, the index ranges from 5 to 20 (α=0.79).

In addition to these six stress indices, we construct indices considering burnout symptoms, health outcomes and problematic alcohol consumption. Our burnout index (*burn*) follows the approach of Kurtz (2008, p. 225), taking into account three questions about burnout syndromes, namely feeling like an automatic pilot most times, feeling burned out from the job, and feeling like being

at the end of the rope. The possible answers ranges from strongly disagree (1) to strongly agree (5) resulting in an index from 3 to 15 (α=0.73). Our index of health outcomes (health), as opposed to the indices of psychological stress and anxiety, considers chronic health outcomes, including migraines, diabetes, chronic low back pain, high blood pressure, liver disease, foot problems, heart disease, reproductive problems and chronic insomnia. Possible answers of these questions were yes (1) or no (0). Thus, the index includes nine questions ranging from 0 to 9 (α=0.56) with increasing levels indicating higher levels of burden or negative health outcomes, respectively. Finally, our last index used as dependent variable considers problematic alcohol consumption (*alc*), basically following Swatt et al. (2007, p. 602), albeit we choose a slightly different approach. The questions included in the survey ask whether the participants were ever worried or felt guilty about alcohol consumption, whether they ever drank more than planned and whether they had periods not remembering what happened when they were drinking. Possible answers were yes, no and N/A (do not drink). For the purpose of our index, the answer yes counted as 1, no and N/A (do not drink) counted as 0. Thus, the resulting index ranged from 0 to 3 (α=0.93).

At this point it seems important to mention the slightly differing number of observations depending on various variables and indices (see Table 1) ranging from 1,060 to 1,104. The reason for this is some missing observations in the data, as some participants did not respond to all questions. However, as the missing observations amount to 44 cases in the worst case (index stress3, not even 4 percent of the data,) this should not be a major problem in our analysis. Moreover, preliminary analyses indicate that excluded cases did not significantly differ from the others on key demographic variables such as gender, age, rank, or race.

By measuring stress and various aspects of stress by means of nine different indices, we are confident to cover a wide range of stress aspects as well as outcomes. The following section explains our explanatory variables while focusing on our measure of social capital at work. Moreover, it covers our choice of control variables such as demographic variables and specific characteristics of the current position within the department. The variables used in the extended specifications are explained at a later stage.

Explanatory and control variables

To address our main research question, we construct as mentioned in the previous theoretical section a narrow index measuring social capital at work (referred to as *social capital*) by focusing on two specific questions in the survey, namely whether there is good and effective cooperation between units and trust in work partners. Possible answers range from strongly agree (1) to strongly disagree (5). For reasons of simplicity we reversed the index to facilitate a more intuitive interpretation of our results. Thus, the index ranges from 2 to 10 with higher levels indicating a higher level of social capital. Although the level of internal consistency was at the lower bound of acceptability (α=0.53) we included it in our following regressions as such moderate level of Cronbach's alpha could also be due to the low number of items included in the index. Moreover, the low α also indicates that there is lower redundancy in our index of social capital. However, in such a situation it is important that we check the results splitting up the index of social capital to examine the effects of the single parts of the index for all the dependent variables (see Table 6).

Additionally, we add the number of years working for the department to control for experience (referred to as *exp*) and age as explanatory variables. A clear prediction for these variables is difficult to generate. People may tend to improve the handling of stress with increasing age and

experience. On the other hand, more experienced police officers may work more hours per week and may bear higher responsibilities. In addition, the relationship between performance and age may be non-linear (inverse U-shape curve) and performance capacity could also affect stress levels (increase of stress after reaching the optimal performance point). As a further control variable we also take into account the current ranking position (*rank*). We use all these three factors to separate out the effects of them even though they are correlated with each other as our results indicate that there is enough remaining variation on each of the variables when the other two variables are held constant. In addition, in case it would be difficult to get distinct coefficient estimates for them, it would only affect the coefficient estimates for those variables that are collinear and not the coefficient estimates of our main independent variable, namely social capital index. Nevertheless, we have run estimations with these single factors independently without observing major changes in the reported results. As further control variables we include the number of children (ranging from 0 to 7, referred to as *child*), as well as dummies for the ethnic group (1 if Caucasian, referred to as *caucasian*) and the marital status (1 if married or live-in partner, referred to as *marital status*). According to the literature, we would not expect higher perceived stress levels for white male officers in relation to black male officers (He, Zhao & Ren, 2005; Walker, 1985). To consider possible differences between genders, we simply constructed a gender dummy with value 1 if female and 0 otherwise. Literature has suggested that females and males have different sources of stress, such that what is stressful for males may not be so for females (Morash and Haarr, 1995; He et al., 2002) (referred to as *female*).

IV. RESULTS

Our findings in the baseline model are presented in Table 2. In all regressions we use standard errors robust to heteroskedasticity of unknown form. Remarkably, in all nine models, the measure of social capital has the expected negative sign, being highly statistically significant at the 1% level in eight out of nine cases (see equations 1 to 8). The estimated regression coefficients in the first eight equations indicate that with each additional one unit increase in social capital stress decreases on average between 0.120 and 0.782 points. Interestingly, social capital affects psychological and physical stress in quite a similar way, as the standardized beta coefficients for the first six equations vary between -0.201 and -0.287. Standardized coefficients convert all the variables into standard deviation induce the same metric which allows us to compare them across different variables. Thus, a one standard deviation increase of social capital reduces stress by more than 0.2 standard deviations. The same applies to our measurement of burnout (standardized β=-0.287) whereas the effects on health outcomes is slightly smaller (β=-0.142) but still highly significant. Remarkably, the magnitude of our standardized beta coefficient of social capital is quite high as compared to other explanatory variables in our estimation which shows the relative importance of social capital.

(Table 2 about here)

Looking at the control variables we observe that stress levels are negatively correlated with increasing age holding the ranking and experience constant, while our measure of experience (number of years worked in the department) has ceteris paribus a positive sign. In almost all the cases both coefficients are statistically significant. On the other hand, the ranking position is most of the regression not statistically significant. For our burnout index there is a negative

relationship observable that is statically significant at the 1% level. Running regressions with age, experience and ranking separately or excluding either rank, experience or age from our specifications lead to similar results. More precisely, when including experience, but excluding rank and age, the coefficients are still positive (and partly significant). When including rank or age without experience, the coefficients are not significant most of the time. But more importantly, in all those specifications the main findings about social capital are very robust and the magnitude of the coefficients remains the same. The dummy variable for ethnic group (*caucasian*) is also statistically significant, indicating that white employees experience higher stress levels, particularly in psychological terms. Moreover, Caucasians are more likely to have an alcohol consumption problem, while there is no statistically significant difference between races for our health measure. Furthermore, while our gender dummy variable is not statistically significant in our measures for psychological stress (Eq1, Eq5, Eq6 and Eq7), the coefficient turns out to be highly statistically significant in all physical aspects of stress (Eq2, Eq3, Eq4, Eq8). Thus, as compared to men, women report suffering from higher levels of physical stress, while there is no significant difference between genders in terms of perceived levels of psychological stress and its aspects, such as anxiety, depression and burnout. Overall, the number of children, marital status and the current rank do not seem to have a reliable influence on our measurements, although having children clearly reduces problematic alcohol consumption and a higher rank within the department seems to reduce the liability for burnout.

Extensions of the model

To check the reliability of these results, we conduct several robustness tests. Firstly, we consider three extensions of our model by including a strain index, a "stability at home" index and – finally – including both of them into our baseline model.

Following Swatt et al. (2007), strain was measured using a nine-item negative work-related events scale. More detailed, participants were asked whether they have experienced certain potentially dangerous or traumatic events in the line of duty and how much it emotionally affected them. In total we included nine incidents such as a violent arrest, shooting someone, being the subject of an IID investigation, responding to a call related to a chemical spill, responding to a bloody crime scene, personally knowing the victim, being involved in a hostage situation, attending a police funeral and experiencing a needle stick injury or other exposure to blood and body fluids. For each event officers were asked if they ever experienced this event, and if so, how much it affected them. Possible answers ranged from “not experienced” (0), “not at all” (1), “a little” (2) to “very much” (3). Thus, we assume that experiencing an event, although without affecting the officer emotionally, was more stressful than not experiencing the event at all. The resulting summative scale ranged from 0 to 27 with higher levels indicating more individual strain (α=0.79). Such a variable allows controlling for experiencing extreme situations. Such a potential stressor is not found in many other job profiles. Not surprisingly, we observe in Table 3 a strong relationship between strain and stress. The strain index influences the stress level positively, as more strain leads to a higher level of (perceived) stress. This relationship holds for all our nine specifications, including health outcomes and problematic alcohol consumption. Moreover, the results of this first extension confirm our results in the baseline model. The index for social capital is still highly statistically significant, while the magnitude of the coefficients remained unchanged. Remarkably, the magnitude of the standardized beta coefficient for strain is comparable to the influence of our social capital variable. Thus, even under high strain levels stress levels do not increase if there is a certain degree of social capital within the police unit. It seems that social capital consisting of trust

between working partners and effective cooperation between the units is able to absorb a considerable level of strain within a job. Regarding our control variables, no major changes could be observed, albeit the coefficients for experience and age are not as significant as in our baseline model.

(Table 3 about here)

In our second extension we construct an index on "stability at home" (referred to as *home*) which included questions about reliability on support from the family, friends etc. and talking about problems with the spouse, relative or friend (He et al., 2002; Howard et al., 2004). For constructing the index, we had to recode the question about reliability on the family ("I feel that I can rely on support from my family, friends etc."), as the answers originally ranged from strongly agree (1) to strongly disagree (5). On the contrary, the second question ("I talk with my spouse, relative or friend about problems") could be answered with never (1) to always (4). Therefore, we reverse the measure of the first question by putting the numbers upside down from strongly disagree (1) to strongly agree (5). Subsequently, we construct an index ranging from 2 to 9 with a moderate level of internal consistency (α=0.53).

As expected, stability at home reduces stress at work, being highly statistically significant in all nine regressions. The impact is quite strong, as standardized beta coefficients range from -0.132 (for Eq26) to -0.219 (for Eq23). The relative importance of our index "stability at home" which can be interpreted as a variable for "social capital at home", once again confirms the importance of social capital on our indices of stress at the workplace. The influence of other variables does not change much, social capital at work is still highly significant (with the exception of the

problematic alcohol index), and gender and ethnic group differences are also robust in this specification.

(Table 4 about here)

Finally, we put the two extensions together into one model, including both a strain and stability at home index into our regression model. Results are presented in Table 5. The inclusion of the two indices does not change the results considerably. Although stability at home reduces stress at work, while additional strain is conducive to stress, both are highly statistically significant and of considerable magnitude, while social capital at work still appears to be highly statistically significant in reducing stress.

(Table 5 about here)

Considering the relative magnitude of the coefficients (by comparing standardized betas) it is obvious that social capital in general, particularly at work, plays a major role in reducing perceived stress levels. Females, as already observed, tend to perceive a higher level of physical stress, while the level of perceived mental or psychological stress does not differ between genders. The opposite applies to ethnic group belonging: White officers perceive higher levels of psychological stress (as expressed in highly significant coefficients in our indices of psychological stress, anxiety and depression, but not in physical stress, somatisation and health outcomes). These findings are robust in all specifications and estimations.

Further robustness tests

Taking into account the rather low level of internal consistency of our measure of social capital we conducted further robustness tests by splitting up the social capital variable into its two single parts, namely the question about good and effective cooperation between units (*cooperation*) and

trust in work partners (*trust*). For reasons of simplicity, just the coefficients for the single measures of social capital are shown using the control variables reported in the specifications in Tables 6 and 7. In both cases the model including our extensions (both the index of strain and stability at home) was estimated.

(Table 6 & 7 about here)

As expected, the results are very robust and do not change. Both single factors are still highly statistically significant in eight out of nine specifications reporting comparable quantitative effects between trust and cooperation, with slightly lower coefficients than in former regressions as they are just measuring one part of the original social capital index. Thus, although the index of social capital exhibits only a moderate scale of internal consistency the estimates of the influence of social capital on stress are confirmed by these regressions including the splitted-up variables.

(Table 8 about here)

Even if we include both single social capital variables together in our model (see Table 8), the results do not change significantly. Again, only for our measure of problematic alcohol consumption both variables of social capital at work are not statistically significant. Moreover, solely in the estimation with the health index as dependent variable, trust appears to be statistically significant, while cooperation is not statistically significant at the 10% level. However, in the remaining seven cases, our two social capital proxies are statistically significant.

Taking account of the endogeneity problem

Surprisingly, very few previous studies raised the question about possible endogeneity issues in this context. However, as various stress measures are investigated, questions about causality

between stress and, e.g. aspects of work environment, camaraderie, unfairness, coping mechanisms etc. necessarily rises. On the other hand, in case of potential causality problems the endogeneity problem leading to inconsistent OLS estimators would vary between stress variables. Finding a very robust and statistically significant relationship between stress and social capital therefore shows the optimistic picture that the effect of social capital cannot be neglected.

Nevertheless, to our best knowledge, no study has taken account of this endogeneity issues so far when examining this specific dataset (see, for instance, McCarty et al. 2007; Gershon et al. 2009; Swatt et al. 2007; Kurtz 2008; He et al. 2005), although endogenous variables can lead to a strong bias of the estimates, as the estimates are neither efficient nor consistent in such a case of misspecification. This problem may also apply to our measure of social capital. That is, that our measurement of social capital not only influences stress in a certain positive way, but also that our indices of stress levels influence social capital. For example, a higher stress level may lead to a lower willingness to cooperate with others and may reduce the trust in others. Thus, we ran a Durbin-Wu-Hausman specification test to consider possible endogeneity issues. More detailed, we ran a first-stage regression of the endogenous variable (in our case the index of social capital) on our set of included variables (the other explanatory variables in the main equation) as well as the excluded instrumental variables which are explained in detail below. Subsequently, we included the residuals of this first-stage regression as an additional regressor in the main equation and conduct a t-test for its significance. As the coefficient for the residuals was highly significant in eight out of nine cases, we have to conclude that our measure of social capital is endogenous in our main equation. The exception case was for the alcohol index, as social capital was not significant in this equation, previous research has shown a positive link between social capital in the workplace and alcohol consumption (Brodsky and Peele, 1999; Putnam, 2000; Skog, 1980).

"Alcohol may play a networking role if consumed during the time spent with colleagues from work by serving as a signal of the individual's commitment to the firm" (Tekin, 2004). Therefore, we approach this issue by using an instrumental two-stage-least square setting where the index of social capital is assumed to be endogenous. In this setting, potential instrumental variables should be strongly correlated with the instrumented variable, but not with the error term. Thus, we use personal characteristics and personal perceptions of the environment as excluded instruments. As an instrument for a personal characteristic we include a dummy for multiple marriages (1 if at least twice being married) as we assume that interpersonal skills of such individuals are lower and, thus, influence the perception of social capital at work in a negative way. The number of persons who married at least twice is surprisingly high, amounting to 258 individuals (23%) in the sample. Besides a multiple-marriage dummy, the two further questions included are "I feel that I am less likely to get chosen for certain assignments because of 'who I am' (e.g. race, gender, sexual orientation, physical characteristics)", referred to as *assignments*, and "When I am assertive or question the way things are done, I am considered militant", referred to as *militant*. Possible answers range on a five-point Likert scale from "strongly agree" (1) to "strongly disagree" (5). More precisely, we assume that personal characteristics and personal perceptions of the environment have a significant impact on the personal perception of social capital at work, namely whether the individual is well integrated into the department or not. In other words, even if there is a considerable degree of social capital in a department, certain individuals who have difficulties with interpersonal relationships in general should report a lower degree of social capital in that specific department (as they are not able to participate in this social process), although other more socialized employees may experience high trust and good cooperation, respectively.

(Table 9 about here)

The first-stage-regressions slightly differ depending on our specification, as the number of included observations ranges from 958 to 985, depending on the number of missing variables. That is, if questions have not been answered included in the specific measurement of stress (our dependent variable) we did not include the observations in our estimation. However, as discussed previously the number of non-responses was rather small, and the excluded individuals did not differ significantly in terms of their personal characteristics. Exemplary the results of the first-stage regression of our specification with the health index as depending variable (*health* with n=985) are reported in Table 9.

As expected, the two questions about personal perception used as instruments in our 2SLS estimation appear as highly significant in the first stage regression. Furthermore, the dummy of multiple marriages is significant at the 10% level. The resulting *F*-statistic for the three included instrument amounts to $F=31.64$, being highly significant. At the same time, the correlation between our measurements of stress and our instruments is not very high. Thus, the two conditions for valid instruments, namely non-correlation (or low correlation) between the instruments and the dependent variable in the structural equation (statistical independence from the disturbance process) as well as quite high explanatory power of the excluded instruments for the endogenous variable (in our case the index for social capital) are fulfilled. This is confirmed by a number of tests we conducted to assess the reliability and efficiency of the IV estimations. First, we report the Sargan-Hansen test which is an over-identification test for the validity of the instruments for models with the number of instruments exceeding the number of endogenous regressors. Overidentifying restrictions produce more efficient estimates in a large sample such as the one that we are using (Baum 2008). Under the null hypothesis, the instruments are valid

instruments, thus uncorrelated with the error therm. In other words, the excluded instruments are correctly excluded from the estimated equation. As the Sargan statistic amounts to 0.906 with a $\chi^2(2)$ p-value of 0.6356 the null hypothesis that the instruments are valid is not rejected. A rejected null hypothesis would indicate that there are problems with the instrument (one or more of the instruments to not appear to be uncorrelated with the disturbance process). Second, we report Shea's (1997) partial R^2 measure taking into account the intercorrelations among the instruments. It amounts to R^2=0.089 and passes the instrument relevance test. Additionally, we ran an underidentification test whether the equation is identified, or in other words, whether the excluded instruments are relevant, thus correlated with the endogenous regressors. The null hypothesis that the model is underidentified is easily rejected by both the Anderson canonical correlations test ($\chi^2(3)$=87.64 with p=0.000) as well as the Cragg-Donald Wald statistic ($\chi^2(3)$=96.20 with p=0.000). Furthermore, we run a test on weak identification, meaning that the excluded instruments are correlated with the endogenous regressors, but only weakly leading to poorly performing estimators. However, the weak identification test reports a Cragg-Donald Wald F-statistic of F=31.64 which is way above the critical values reported by Stock & Yogo (2005). Finally, we also included two statistics for testing the significance of the endogenous regressors in the structural equation being estimated (Anderson-Rubin test and the closely related Stock-Wright LM test). The null hypothesis tested in both cases is that the coefficients of the endogenous regressors in the structural equation are jointly equal to zero and that the over-identifying restrictions are valid. Both tests are robust to the presence of weak instruments. Both the Anderson-Rubin Wald and the Stock-Wright LM test easily reject the null hypothesis that the endogenous regressor in the structural equation are jointly equal to zero in all models except for the alcohol consumption specification. This is not surprising considering our former results

where the coefficient for social capital was not significant in our measure of problematic alcohol consumption either.

(Table 10 about here)

Thus, after conducted all these tests, we are confident to apply the 2SLS setting in this form to our specifications. The results of our 2SLS estimation taking into account the endogeneity of our social capital index are shown in Table 10. Remarkably, all main results derived from our former models are confirmed by the 2SLS instrumental setting. Once again, the index for social capital reduces stress significantly in the first eight out of nine measurements. In all our measurements of physical stress the gender dummy is significantly positive, meaning that women experience higher physical stress levels than men. The dummy for ethnic group shows that white men and women experience higher level of psychological stress, while the levels of physical stress and effects on health do not significantly differ from other ethnic groups. Interestingly, while age still impacts stress levels significantly negative (lower perceived stress levels with increasing age), the experience variable is not statistically significant anymore in this specification while rank turns out to be statistically significant in this IV estimation reducing stress levels in three specifications. Not surprisingly, the indices for strain and stability at home remain statistically significant.

In sum, our results of the 2SLS estimations confirm the importance and significance of social capital and interpersonal skills at work for reducing stress, even when controlling for endogeneity of the social capital estimator.

V. CONCLUSIONS

The aim of this paper was to investigate the effect that social capital has on a large set of stress indices among police officers and within a physically and emotionally stressful work environment. Many police stressors are comparable to other work environments (e.g., shift work, excessive overtime, heavy workload, poor working conditions, strong interactions with the public), but police officers can also encounter, witness or hear about fellow officers' involvement in extreme situations such as physical or even life threatening danger and the exposure to disturbing events in general. Is it also useful to focus on police officers as they are an essential part for a well-functioning society? We stress in this paper that social capital within a work environment may be a breeding ground for social stability among workers. In other words, a lower level of stress is generated if trust and cooperation is established between co-workers and units. New or potential challenges can be tackled in a better manner in high social capital environments as police officers are better cope and adapt to such circumstances. Social cohesion reduces transaction costs and a better access to information enables a better coordination of activities. Thus, social capital is a resource that police officers can draw upon in their personal and professional lives which should help them to deal with stressful situations. In this paper we explore the relationship between stress and social capital within police officers using data on officers of the Baltimore Police Department in Maryland, USA (Gershon, 1999, 2000). Despite the fact that there is a large multidisciplinary literature on stress or on social capital, the link between both factors is still underexplored. Our results provide strong empirical support that social capital helps in reducing stress using nine different proxies for stress and conducting a large set of robustness tests. Social capital has therefore shown to be extremely effective in negating the impacts of the majority of the stresses, and significantly reduces the impact of the

major work events (shootings, hostages and funerals etc). This finding would indicate that police management and police officers themselves would be greatly benefited through the implementation of social programs that enhance social capital or in our case trust and a targetable objective for stress relief programs with the police force. It may also be interesting to explore police environments in different countries to check whether the extrapolation of the results is possible. Brown and Campbell (1990), e.g., stress that there are divergent traditions between countries and results from the USA cannot be extrapolated to other countries such as the UK. Moreover, the source of stress may be driven by the nature of the organization itself. However, it is also useful to test whether the obtained results may also hold in other environments that are comparable to the police one (e.g., military). Nevertheless, additional studies of highly stressed work employees and environments in other areas would contribute to a better understanding of the relationship between stress and social capital and may improve the quality of relief programs and greatly reduce the costs and its externalities accumulated through stressed employees. Currently the predominant stress reduction programs are counselling services, utilised in the hope that this will stem the flood of stress related retirements and burnouts. This hope has been labelled occasionally as too simplistic given the very complex relationships between stress incidents, individual demographic variables and organisational structure (Dick, 2000). In addition social capital might be a good alternative instrument in situations where common stress reducing instruments fail or where the necessary information to design and enforce suitable instruments and directives cannot effectively be used.

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VII. TABLES

Table 1: Descriptive Statistics

Variable		count	percent	n	Mean	σ^2	Min	Max
Gender	Male	943	85.73%	1,100				
	Female	157	14.27%					
Ethnic Group	African-American	355	32.51%	1,092				
	Caucasian	696	63.74%					
	Hispanic	14	1.28%					
	Other	27	2.47%					
Education Level	High School	165	15.08%	1,094				
	Some College	603	55.12%					
	College	285	26.05%					
	Graduate School	41	3.75%					
Current Rank	Officer Trainee	91	8.27%	1,100				
	Officer	601	54.64%					
	Agent	62	5.64%					
	Detective	144	13.09%					
	Sergeant	143	13.00%					
	Lieutenant or	59	5.36%					
Marital status	Married	658	59.87%	1,099				
	Live-in partner	88	8.01%					
	Divorced/Separat	135	12.28%					
	Single	213	19.38%					
	Widowed	5	0.45%					
Age				1,081	36.04	9.09	20	66
Experience				1,078	11.52	9.28	0	44
Children				1,090	1.18	1.16	0	7
Stress1				1,064	10.57	3.02	7	28
Stress2				1,086	6.61	1.84	5	20
Stress3				1,060	17.18	4.36	12	48
Somatisation				1,087	7.05	2.01	5	20
Anxiety				1,074	6.82	1.81	5	20
Depression				1,067	7.24	2.18	5	20
Burnout				1,092	7.91	2.56	3	15
Health				1,104	1.18	1.35	0	9
Alcohol				1,104	0.61	0.92	0	3
Social Capital				1,075	7.19	1.60	2	10
Home Index				1,078	6.60	1.41	2	9
Strain Index				1,077	11.98	5.79	0	27

Table 2: Baseline Model

	Eq1	Eq2	Eq3	Eq4	Eq5	Eq6	Eq7	Eq8	Eq9
Dep. Var.	stress1	stress2	stress3	som	anx	dep	burn	health	alc
social	-0.519***	-0.246***	-0.782***	-0.252***	-0.256***	-0.369***	-0.460***	-0.120***	-0.020
capital	(-7.390)	(-5.588)	(-7.612)	(-5.379)	(-5.812)	(-6.991)	(-8.909)	(-4.041)	(-1.057)
	-0.275	*-0.214*	*-0.287*	*-0.201*	*-0.227*	*-0.271*	*-0.287*	*-0.142*	*-0.034*
child	0.046	0.044	0.075	0.036	0.007	0.039	-0.005	-0.023	-0.062***
	(0.565)	(0.873)	(0.634)	(0.657)	(0.132)	(0.644)	(-0.066)	(-0.646)	(-2.622)
	0.018	*0.028*	*0.020*	*0.021*	*0.004*	*0.021*	*-0.002*	*-0.020*	*-0.078*
rank	-0.053	-0.024	-0.083	-0.012	0.017	-0.075	-0.184***	0.034	0.01
	(-0.642)	(-0.472)	(-0.682)	(-0.221)	(0.333)	(-1.246)	(-2.728)	(0.906)	(0.387)
	-0.024	*-0.019*	*-0.027*	*-0.009*	*0.013*	*-0.049*	*-0.102*	*0.036*	*0.015*
exp	0.077***	0.049***	0.127***	0.052***	0.038**	0.063***	0.060**	0.040***	0.018***
	(3.881)	(3.720)	(4.286)	(3.598)	(3.091)	(4.405)	(3.076)	(4.525)	(3.083)
	0.238	*0.250*	*0.271*	*0.243*	*0.194*	*0.267*	*0.216*	*0.276*	*0.181*
age	-0.066***	-0.028**	-0.093***	-0.040***	-0.037***	-0.045***	-0.049***	-0.007	-0.018***
	(-3.569)	(-2.252)	(-3.424)	(-2.877)	(-3.211)	(-3.471)	(-2.748)	(-0.830)	(-3.249)
	-0.197	*-0.140*	*-0.195*	*-0.181*	*-0.188*	*-0.189*	*-0.175*	*-0.046*	*-0.171*
female	0.228	0.759***	0.954**	0.984***	0.141	0.112	-0.182	0.507***	-0.184***
	(0.788)	(3.806)	(2.208)	(4.721)	(0.792)	(0.536)	(-0.820)	(3.955)	(-2.617)
	0.026	*0.142*	*0.075*	*0.169*	*0.027*	*0.018*	*-0.025*	*0.130*	*-0.069*
caucasian	0.773***	0.122	0.919***	0.238*	0.333**	0.304**	0.008	0.037	0.370***
	(3.777)	(0.946)	(3.041)	(1.697)	(2.554)	(2.070)	(0.048)	(0.418)	(6.361)
	0.123	*0.032*	*0.101*	*0.057*	*0.088*	*0.067*	*0.001*	*0.013*	*0.191*
marital	-0.059	0.04	-0.021	-0.007	-0.094	-0.093	0.055	-0.061	0.021
status	(-0.272)	(0.301)	(-0.067)	(-0.044)	(-0.710)	(-0.587)	(0.299)	(-0.632)	(0.317)
	-0.009	*0.01*	*-0.002*	*-0.002*	*-0.024*	*-0.020*	*0.010*	*-0.021*	*0.010*
constant	15.406***	8.660***	24.199***	9.425***	9.345***	10.852***	12.841***	1.714***	1.002***
	(20.203)	(18.414)	(22.389)	(18.530)	(20.435)	(18.917)	(19.405)	(5.351)	(4.759)
R-Squared	0.112	0.097	0.127	0.093	0.075	0.105	0.097	0.113	0.070
F	13.681***	12.831***	16.313***	11.496***	9.261***	12.237***	12.619***	14.416***	12.518***
N	991	1009	987	1010	998	993	1019	1024	1024

*Notes: t-statistics in parentheses. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01. Regressions with robust standard errors, beta coefficients are reported in italic.*

Table 3: Extension 1 – including an index for "strain"

	Eq10	**Eq11**	**Eq12**	**Eq13**	**Eq14**	**Eq15**	**Eq16**	**Eq17**	**Eq18**
Dep. Var.	stress1	stress2	stress3	som	anx	dep	burn	health	alc
social	-0.507***	-0.243***	-0.765***	-0.248***	-0.248***	-0.361***	-0.445***	-0.111***	-0.018
capital	(-7.113)	(-5.397)	(-7.299)	(-5.184)	(-5.512)	(-6.726)	(-8.598)	(-3.706)	(-0.954)
	-0.267	*-0.211*	*-0.280*	*-0.197*	*-0.219*	*-0.264*	*-0.276*	*-0.131*	*-0.031*
child	-0.009	0.019	-0.005	0.005	-0.013	0.006	-0.066	-0.055	-0.071***
	(-0.105)	(0.391)	(-0.041)	(0.087)	(-0.259)	(0.098)	(-0.931)	(-1.540)	(-3.025)
	-0.003	*0.012*	*-0.001*	*0.003*	*-0.008*	*0.003*	*-0.03*	*-0.047*	*-0.090*
rank	-0.152*	-0.073	-0.230*	-0.075	-0.044	-0.138**	-0.283***	-0.011	-0.008
	(-1.875)	(-1.381)	(-1.889)	(-1.340)	(-0.841)	(-2.282)	(-4.204)	(-0.274)	(-0.323)
	-0.071	*-0.056*	*-0.074*	*-0.053*	*-0.034*	*-0.089*	*-0.156*	*-0.011*	*-0.013*
exp	0.034*	0.027**	0.062**	0.026*	0.014	0.036**	0.022	0.022**	0.010*
	(1.762)	(2.130)	(2.208)	(1.817)	(1.176)	(2.544)	(1.160)	(2.477)	(1.652)
	0.105	*0.139*	*0.133*	*0.119*	*0.071*	*0.151*	*0.079*	*0.152*	*0.100*
age	-0.054***	-0.022*	-0.076***	-0.032**	-0.031***	-0.038***	-0.039**	-0.002	-0.015***
	(-2.984)	(-1.852)	(-2.884)	(-2.443)	(-2.746)	(-2.967)	(-2.286)	(-0.246)	(-2.778)
	-0.162	*-0.111*	*-0.158*	*-0.146*	*-0.157*	*-0.157*	*-0.137*	*-0.014*	*-0.146*
female	0.287	0.785***	1.024**	1.013***	0.168	0.139	-0.157	0.526***	-0.185***
	(1.041)	(4.023)	(2.503)	(4.990)	(0.973)	(0.699)	(-0.757)	(4.233)	(-2.731)
	0.033	*0.147*	*0.080*	*0.174*	*0.032*	*0.022*	*-0.021*	*0.135*	*-0.069*
caucasian	0.733***	0.105	0.857***	0.216	0.299**	0.281*	-0.036	-0.002	0.364***
	(3.640)	(0.828)	(2.893)	(1.564)	(2.331)	(1.940)	(-0.226)	(-0.021)	(6.388)
	0.116	*0.027*	*0.094*	*0.052*	*0.079*	*0.062*	*-0.007*	*-0.001*	*0.189*
marital	-0.136	-0.006	-0.147	-0.06	-0.145	-0.141	-0.009	-0.084	-0.002
Status	(-0.650)	(-0.045)	(-0.478)	(-0.416)	(-1.126)	(-0.910)	(-0.053)	(-0.889)	(-0.035)
	-0.021	*-0.002*	*-0.016*	*-0.014*	*-0.037*	*-0.03*	*-0.002*	*-0.029*	*-0.001*
strain	0.159***	0.079***	0.237***	0.096***	0.091***	0.100***	0.139***	0.066***	0.028***
	(8.515)	(6.879)	(8.830)	(7.816)	(7.715)	(7.549)	(8.946)	(8.209)	(4.805)
	0.298	*0.245*	*0.309*	*0.273*	*0.285*	*0.260*	*0.307*	*0.279*	*0.170*
constant	13.900***	7.935***	21.955***	8.532***	8.491***	9.893***	11.526***	1.090***	0.728***
	(18.205)	(16.605)	(20.162)	(16.841)	(18.680)	(17.159)	(17.699)	(3.425)	(3.391)
R-Squared	0.181	0.144	0.200	0.150	0.137	0.157	0.168	0.168	0.093
F	21.938***	17.874***	25.902***	17.979***	15.707***	18.590***	20.575***	26.340***	13.800***
N	978	997	975	998	985	980	1006	1009	1009

*Notes: t-statistics in parentheses. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01. Regressions with robust standard errors, beta coefficients are reported in italic.*

Table 4: Extension 2 – Including an index for "stability at home"

	Eq19	Eq20	Eq21	Eq22	Eq23	Eq24	Eq25	Eq26	Eq27
Dep. Var.	stress1	stress2	stress3	som	anx	dep	burn	health	alc
social	-0.453***	-0.216***	-0.685***	-0.225***	-0.213***	-0.325***	-0.407***	-0.099***	-0.007
capital	(-6.741)	(-5.127)	(-7.119)	(-4.955)	(-5.217)	(-6.325)	(-7.789)	(-3.442)	(-0.362)
	-0.240	*-0.188*	*-0.251*	*-0.179*	*-0.189*	*-0.239*	*-0.254*	*-0.118*	*-0.012*
child	0.034	0.041	0.059	0.033	-0.003	0.03	-0.010	-0.023	-0.064***
	(0.423)	(0.818)	(0.519)	(0.603)	(-0.056)	(0.520)	(-0.149)	(-0.637)	(-2.688)
	0.013	*0.026*	*0.016*	*0.019*	*-0.002*	*0.016*	*-0.005*	*-0.02*	*-0.080*
rank	-0.048	-0.021	-0.074	-0.007	0.016	-0.072	-0.178***	0.035	0.01
	(-0.601)	(-0.413)	(-0.635)	(-0.128)	(0.319)	(-1.232)	(-2.714)	(0.937)	(0.363)
	-0.022	*-0.016*	*-0.024*	*-0.005*	*0.013*	*-0.046*	*-0.098*	*0.037*	*0.015*
exp	0.068***	0.045***	0.114***	0.048***	0.032***	0.057***	0.053***	0.038***	0.016***
	(3.541)	(3.500)	(4.005)	(3.387)	(2.748)	(4.167)	(2.773)	(4.346)	(2.799)
	0.211	*0.230*	*0.243*	*0.225*	*0.165***	*0.243*	*0.191*	*0.265*	*0.164*
age	-0.063***	-0.027**	-0.089***	-0.039***	-0.034***	-0.044***	-0.048***	-0.006	-0.017***
	(-3.490)	(-2.214)	(-3.376)	(-2.870)	(-3.100)	(-3.468)	(-2.687)	(-0.758)	(-3.133)
	-0.188	*-0.136*	*-0.186*	*-0.177*	*-0.174*	*-0.182*	*-0.169*	*-0.043*	*-0.163*
female	0.369	0.844***	1.178***	1.068***	0.233	0.223	-0.026	0.576***	-0.149**
	(1.320)	(4.272)	(2.810)	(5.195)	(1.378)	(1.092)	(-0.119)	(4.529)	(-2.092)
	0.042	*0.158*	*0.092*	*0.183*	*0.044*	*0.035*	*-0.003*	*0.148*	*-0.055*
caucasian	0.751***	0.117	0.884***	0.237*	0.329***	0.282*	-0.027	0.022	0.374***
	(3.770)	(0.916)	(2.996)	(1.698)	(2.600)	(1.961)	(-0.172)	(0.253)	(6.462)
	0.119	*0.031*	*0.097*	*0.057*	*0.087*	*0.062*	*-0.005*	*0.008*	*0.192*
marital	0.103	0.105	0.21	0.048	0.009	0.019	0.191	-0.015	0.052
Status	(0.473)	(0.765)	(0.654)	(0.316)	(0.065)	(0.119)	(1.057)	(-0.156)	(0.800)
	0.016	*0.027*	*0.023*	*0.011*	*0.002*	*0.004*	*0.035*	*-0.005*	*0.026*
home	-0.439***	-0.214***	-0.658***	-0.203***	-0.279***	-0.305***	-0.389***	-0.125***	-0.089***
	(-5.648)	(-4.572)	(-5.848)	(-4.156)	(-5.659)	(-5.363)	(-7.275)	(-3.916)	(-4.255)
	-0.206	*-0.166*	*-0.215*	*-0.144*	*-0.219*	*-0.199*	*-0.216*	*-0.132*	*-0.135*
constant	17.705***	9.812***	27.667***	10.537***	10.768***	12.482***	14.947***	2.371***	1.465***
	(19.853)	(17.618)	(21.414)	(17.950)	(19.466)	(18.839)	(21.144)	(6.252)	(6.173)
R-Squared	0.153	0.125	0.171	0.115	0.121	0.143	0.144	0.133	0.088
F	14.383***	13.778***	16.986***	12.785***	10.373***	13.084***	17.303***	14.329***	13.454***
N	984	1001	980	1002	991	986	1007	1009	1009

*Notes: t-statistics in parentheses. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01. Regressions with robust standard errors, beta coefficients are reported in italic.*

Table 5: Extension 3 – including both indices

	Eq28	Eq29	Eq30	Eq31	Eq32	Eq33	Eq34	Eq35	Eq36
Dep. Var.	stress1	stress2	stress3	som	anx	dep	burn	health	alc
social	-0.441***	-0.212***	-0.667***	-0.220***	-0.205***	-0.315***	-0.392***	-0.093**	-0.004
capital	(-6.516)	(-4.956)	(-6.858)	(-4.768)	(-4.950)	(-6.099)	(-7.566)	(-3.208)	(-0.193)
	-0.232	-0.184	-0.244	-0.175	-0.181	-0.231	-0.245	-0.110	-0.006
child	-0.025	0.014	-0.027	-0.002	-0.025	-0.006	-0.069	-0.051	-0.073***
	(-0.321)	(0.278)	(-0.246)	(-0.028)	(-0.504)	(-0.105)	(-1.003)	(-1.463)	(-3.114)
	-0.01	0.009	-0.007	-0.001	-0.016	-0.003	-0.031	-0.044	-0.091
rank	-0.144*	-0.067	-0.215*	-0.067	-0.043	-0.132**	-0.271***	-0.009	-0.008
	(-1.844)	(-1.292)	(-1.850)	(-1.217)	(-0.854)	(-2.273)	(-4.164)	(-0.224)	(-0.302)
	-0.067	-0.052	-0.070	-0.047	-0.034	-0.086	-0.150	-0.009	-0.012
exp	0.026	0.024*	0.051*	0.023	0.009	0.031**	0.015	0.020**	0.008
	(1.373)	(1.925)	(1.870)	(1.634)	(0.767)	(2.258)	(0.818)	(2.237)	(1.396)
	0.08	0.124	0.109	0.106	0.045	0.130	0.055	0.139	0.085
age	-0.052***	-0.022*	-0.074***	-0.033**	-0.029***	-0.037***	-0.037**	-0.001	-0.014***
	(-2.941)	(-1.865)	(-2.885)	(-2.492)	(-2.667)	(-3.013)	(-2.226)	(-0.131)	(-2.695)
	-0.157	-0.111	-0.155	-0.147	-0.147	-0.155	-0.132	-0.007	-0.141
female	0.414	0.864***	1.230***	1.090***	0.251	0.242	-0.016	0.579***	-0.152**
	(1.554)	(4.455)	(3.090)	(5.425)	(1.534)	(1.241)	(-0.082)	(4.693)	(-2.229)
	0.047	0.161	0.096	0.187	0.048	0.038	-0.002	0.148	-0.057
caucasian	0.699***	0.092	0.803***	0.204	0.288**	0.250*	-0.08	-0.012	0.365***
	(3.553)	(0.726)	(2.764)	(1.476)	(2.308)	(1.755)	(-0.521)	(-0.142)	(6.439)
	0.111	0.024	0.088	0.049	0.076	0.055	-0.015	-0.004	0.189
marital	0.043	0.072	0.115	0.011	-0.033	-0.014	0.134	-0.042	0.035
Status	(0.203)	(0.532)	(0.366)	(0.071)	(-0.254)	(-0.091)	(0.760)	(-0.433)	(0.552)
	0.007	0.018	0.012	0.002	-0.009	-0.003	0.024	-0.015	0.018
strain	0.157***	0.077***	0.233***	0.094***	0.090***	0.099***	0.136***	0.066***	0.027***
	(8.607)	(6.823)	(8.938)	(7.723)	(7.788)	(7.663)	(8.923)	(8.150)	(4.719)
	0.295	0.239	0.305	0.266	0.283	0.257	0.302	0.276	0.165
home	-0.437***	-0.214***	-0.657***	-0.203***	-0.275***	-0.308***	-0.383***	-0.125***	-0.095***
	(-5.604)	(-4.545)	(-5.813)	(-4.143)	(-5.557)	(-5.374)	(-7.150)	(-3.880)	(-4.681)
	-0.205	-0.165	-0.213	-0.143	-0.215	-0.199	-0.212	-0.131	-0.145
constant	16.241***	9.117***	25.506***	9.679***	9.922***	11.572***	13.614***	1.747***	1.234***
	(18.052)	(15.943)	(19.393)	(16.277)	(17.875)	(17.157)	(19.370)	(4.538)	(5.170)
R-Squared	0.22	0.169	0.243	0.169	0.18	0.194	0.212	0.188	0.114
F	22.749***	17.872***	26.485***	18.265***	16.925***	19.541***	24.187***	26.186***	15.360***
N	972	990	969	991	979	974	995	997	997

*Notes: t-statistics in parentheses. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01. Regressions with robust standard errors, beta coefficients are reported in italic.*

Table 6: Robustness Test: Splitting up to single factors of social capital - cooperation

	Eq37	**Eq38**	**Eq39**	**Eq40**	**Eq41**	**Eq42**	**Eq43**	**Eq44**	**Eq45**
Dep. Var.	stress1	stress2	stress3	som	anx	dep	burn	health	alc
cooperation	0.594***	0.262***	0.869***	0.292***	0.297***	0.407***	0.468***	0.106**	0.014
	(6.247)	(4.260)	(6.260)	(4.408)	(5.184)	(5.474)	(5.884)	(2.488)	(0.495)
	0.204	*0.148*	*0.207*	*0.151*	*0.171*	*0.193*	*0.190*	*0.081*	*0.015*
Other control factors	yes	yes	yes	yes	yes	yes	yes	yes	yes
R-Squared	0.209	0.158	0.228	0.162	0.177	0.179	0.19	0.183	0.114
F	22.538***	17.523***	25.755***	18.572***	17.473***	18.917***	21.235***	26.067***	15.452***
N	975	993	972	994	982	977	998	1000	1000

*Notes: t-statistics in parentheses. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01. Regressions with robust standard errors, beta coefficients are reported in italic. Control factors see Table 5.*

Table 7: Robustness Test: Splitting up to single factors of social capital - trust

	Eq46	**Eq47**	**Eq48**	**Eq49**	**Eq50**	**Eq51**	**Eq52**	**Eq53**	**Eq54**
Dep. Var.	stress1	stress2	stress3	som	anx	dep	burn	health	alc
trust	0.582***	0.311***	0.918***	0.297***	0.244***	0.440***	0.606***	0.153***	-0.006
	(4.883)	(4.105)	(5.331)	(3.647)	(3.320)	(4.982)	(6.610)	(3.089)	(-0.196)
	0.174	*0.152*	*0.190*	*0.133*	*0.122*	*0.182*	*0.213*	*0.102*	*-0.006*
Other control factors	yes	yes	yes	yes	yes	yes	yes	yes	yes
R-Squared	0.198	0.159	0.221	0.157	0.164	0.176	0.2	0.186	0.112
F	20.783***	16.932***	24.386***	17.445***	15.871***	18.354***	23.504***	25.924***	15.326***
N	976	994	973	995	983	978	999	1001	1001

*Notes: t-statistics in parentheses. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01. Regressions with robust standard errors, beta coefficients are reported in italic. Control factors see Table 5.*

Table 8: Robustness Test: Splitting up to single factors of social capital – including both var.

	Eq55	**Eq56**	**Eq57**	**Eq58**	**Eq59**	**Eq60**	**Eq61**	**Eq62**	**Eq63**
Dep. Var.	stress1	stress2	stress3	som	anx	dep	burn	health	alc
cooperation	0.475*** (5.054) *0.163*	0.190*** (3.111) *0.107*	0.673*** (4.907) *0.160*	0.228*** (3.446) *0.118*	0.254*** (4.472) *0.146*	0.313*** (4.286) *0.148*	0.325*** (3.975) *0.132*	0.067 (1.581) *0.052*	0.019 (0.675) *0.022*
trust	0.399*** (3.345) *0.119*	0.240*** (3.170) *0.118*	0.660*** (3.851) *0.136*	0.210** (2.560) *0.094*	0.145** (1.963) *0.073*	0.319*** (3.645) *0.132*	0.475*** (4.986) *0.167*	0.124** (2.469) *0.083*	-0.015 (-0.449) *-0.015*
Other control factors	yes	yes	yes	yes	yes	yes	yes	yes	yes
R-Squared	0.22	0.169	0.243	0.169	0.181	0.194	0.213	0.188	0.114
F	20.891***	16.237***	24.140***	16.711***	15.774***	17.852***	22.175***	23.826***	14.033***
N	972	990	969	991	979	974	995	997	997

*Notes: t-statistics in parentheses. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01. Regressions with robust standard errors, beta coefficients are reported in italic.*

Table 9: First-stage regression and statistics

	First stage LS	Statistics	
Dep. Var.	social capital		
child	-0.022		
	(-0.49)	**Test of excluded instruments:**	
rank	0.044	F(12, 972)	14.95
	(1.05)		
exp	-0.038***	**Partial R-squared:**	0.09
	(-3.06)		
age	0.006	**Underidentification Test:**	
	(0.50)		
female	-0.384***	Anderson stat. Chi-sq(3)	87.64
	(-2.68)	p-value	0.00
caucasian	-0.043		
	(-0.41)	Cragg-Donald W Chi-sq(3)	96.20
marital	0.013	p-value	0.00
status	(0.12)	**Weak identification Test:**	
strain	0.006		
	(0.61)	Cragg-Donald Wald F-Stat	31.64
home	0.132***		
	(3.84)	**Weak-instrument-robust inference:**	
assignments	0.180***	Anderson-Rubin Wald test	
	(4.51)	Chi-sq(3)	14.27
militant	0.270***	p-value	0.00
	(5.71)		
multiple	-0.203*	Stock-Wright LM S statistic	
marriages	(-1.71)	Chi-sq(3)	14.07
constant	5.077***	p-value	0.00
	(12.10)		
F	14.95***		
N	985		

*Notes: t-statistics in parentheses. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01.*

Table 10: 2SLS Regression Results

Dep. Var.	stress1	stress2	stress3	som	anx	dep	burn	health	alc
social capital	-1.305*** (-6.279)	-0.439*** (-3.654)	-1.744*** (-6.022)	-0.500*** (-3.782)	-0.640*** (-5.157)	-0.947*** (-6.077)	-1.581*** (-7.794)	-0.309*** (-3.519)	-0.101 (-1.639)
child	-0.061 (-0.677)	0.007 (0.129)	-0.075 (-0.597)	-0.008 (-0.140)	-0.044 (-0.828)	-0.024 (-0.367)	-0.110 (-1.276)	-0.059 (-1.577)	-0.078*** (-2.973)
rank	-0.152* (-1.797)	-0.079* (-1.648)	-0.241** (-2.056)	-0.078 (-1.477)	-0.048 (-0.966)	-0.134** (-2.161)	-0.266*** (-3.288)	0.004 (0.105)	-0.011 (-0.427)
exp	0.001 (0.021)	0.02 (1.363)	0.024 (0.647)	0.017 (1.017)	-0.005 (-0.340)	0.012 (0.613)	-0.015 (-0.576)	0.01 (0.865)	0.005 (0.669)
age	-0.049** (-2.109)	-0.024* (-1.830)	-0.073** (-2.259)	-0.034** (-2.317)	-0.027** (-1.982)	-0.036** (-2.120)	-0.040* (-1.774)	0.002 (0.174)	-0.014** (-1.995)
female	0.153 (0.506)	0.804*** (4.685)	0.929** (2.200)	1.000*** (5.298)	0.138 (0.774)	0.056 (0.252)	-0.390 (-1.345)	0.491*** (3.893)	-0.183** (-2.069)
caucasian	0.766*** (3.576)	0.111 (0.912)	0.892*** (3.001)	0.227* (1.696)	0.318** (2.516)	0.305* (1.950)	-0.000 (-0.001)	0.008 (0.094)	0.368*** (5.867)
marital status	0.02 (0.086)	0.076 (0.583)	0.099 (0.311)	0.006 (0.038)	-0.045 (-0.335)	-0.04 (-0.239)	0.057 (0.259)	-0.046 (-0.483)	0.032 (0.481)
strain	0.151*** (7.682)	0.077*** (6.918)	0.227*** (8.373)	0.093*** (7.571)	0.087*** (7.505)	0.093*** (6.493)	0.123*** (6.483)	0.064*** (7.758)	0.026*** (4.533)
home	-0.275*** (-3.481)	-0.167*** (-3.682)	-0.450*** (-4.110)	-0.147** (-2.936)	-0.194*** (-4.146)	-0.183** (-3.138)	-0.160* (-2.104)	-0.089** (-2.688)	-0.078*** (-3.365)
constant	21.731*** (14.092)	10.578*** (12.013)	32.381*** (15.095)	11.485*** (11.853)	12.698*** (13.867)	15.561*** (13.584)	21.380*** (14.209)	3.087*** (4.776)	1.867*** (4.120)
N	961	979	958	980	968	963	983	985	985

*Notes: t-statistics in parentheses. Significance levels: * 0.05 < p < 0.10, ** 0.01< p < 0.05, *** p < 0.01.*