1103 2022

SOEP Survey Papers
Series H - SOEP-IS Modules

SOEP-IS 2014 – Inclusion of the short form of the "CHAOS"-scale

Wolfgang Rauch

DIW SOEP

Running since 1984, the German Socio-Economic Panel (SOEP) is a wide-ranging representative longitudinal study of private households, located at the German Institute for Economic Research, DIW Berlin.

The aim of the SOEP Survey Papers Series is to thoroughly document the survey's data collection and data processing.

The SOEP Survey Papers is comprised of the following series:
Series A – Survey Instruments (Erhebungsinstrumente)
Series B – Survey Reports (Methodenberichte)
Series C – Data Documentation (Datendokumentationen)
Series D – Variable Descriptions and Coding
Series E – SOEPmonitors
Series F – SOEP Newsletters
Series G – General Issues and Teaching Materials
Series H – SOEP-IS Modules

The SOEP Survey Papers are available at **http://www.diw.de/soepsurveypapers**

Editors:
Dr. Jan Goebel, DIW Berlin
Prof. Dr. Stefan Liebig, DIW Berlin and Freie Universität Berlin
Prof. Dr. David Richter, DIW Berlin and Freie Universität Berlin
Prof. Dr. Carsten Schröder, DIW Berlin and Freie Universität Berlin
Prof. Dr. Jürgen Schupp, DIW Berlin and Freie Universität Berlin
Prof. Dr. Sabine Zinn, DIW Berlin and Humboldt Universität zu Berlin

Please cite this paper as follows:

Wolfgang Rauch. 2022. SOEP-IS 2014 – Inclusion of the short form of the "CHAOS"-scale in SOEP-IS. SOEP Survey Papers 1103: Series H. Berlin: DIW/SOEP

This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License.
© 2022 by SOEP

ISSN: 2193-5580 (online)

DIW Berlin
German Socio-Economic Panel (SOEP)
Mohrenstr. 58
10117 Berlin
Germany

soeppapers@diw.de

SOEP-IS 2014 – Inclusion of the short form of the "CHAOS"-scale in SOEP-IS

Module Title in SOEP Documentation: Confusion, Hubbub, and Order Scale (CHAOS)

Wolfgang Rauch

Wolfgang Rauch
Forum Self-Regulation and Regulation
Department of Psychology
Heidelberg University
wolfgang.rauch@psychologie.uni-heidelberg.de
www.uni-heidelberg.de/selfregulation

Contact:
Universität Heidelberg
Psychologisches Institut
Hauptstr. 47-51
69117 Heidelberg
Phone 06221 54 7123

Proposal: Inclusion of the short form of the "CHAOS"-scale in SOEP-IS

Background

Families shape children's socio-emotional and cognitive development, contributing to subsequent outcomes such as educational attainment and mental as well as physical health (Bradley & Corwyn, 2002; Heckman, 2007; Repetti, Taylor, & Seeman, 2002). Psychological approaches to family influences on child development have focused on intra- and interpersonal aspects of the family environment such as caregiver activities (e.g. parenting behaviors, parenting styles) or beliefs and attitudes (e.g. educational aspirations). Sociological, educational, and economic research, on the other hand, has more often been concerned with structural constraints and (arguably) more objective measures such as societal inequality, parental educational attainment, and family income (e.g. Coneus & Sprietsma, 2009; Tamm, 2008).

The proposed project aims at integrating psychological, that is, individual-centered research with research of "harder" measurements of socio-economic status and the physical environment of children in families by including the Chaos, Hubbub, And Order Scale (CHAOS; Matheny, Wachs, Ludwig, & Phillips, 1995) in the SOEP-IS.

Home Chaos

Chaotic homes are characterized by high levels of environmental confusion, that is, by noise, crowding, and "situational traffic" of persons coming and going in the home (Matheny et al., 1995). Parental self-reports of the perceived home chaos can be obtained with the CHAOS scale, an internationally established scale with adequate reliability (full version with 15 items: $\alpha = .79$, test-retest stability = .75, Matheny et al., 1995; short version with six items: $\alpha = .63$, Pike, Iervolino, Eley, Price, & Plomin, 2006).

Home chaos is associated with child behavior problems (Jaffee, Hanscombe, Haworth, Davis, & Plomin, 2012; Dumas, Nissley, Nordstrom, Smith, Prinz, & Levine, 2005) and cognitive development (Pike et al., 2006). At least in part, the effects of chaos on child development are of an interactive nature such that parenting behaviors are less effective in chaotic homes (Coldwell, Pike, & Dunn, 2006; Dumas et al., 2005). Even though home chaos is negatively correlated with family SES such that children and adolescents from low-income families are confronted with higher levels of chaos (Evans, Gonnella, Marcynyszyn, Gentile, & Salpekar, 2005), correlations between chaos and SES are generally moderate to low (Matheny et al., 1995; Dumas et al., 2005), and both SES and chaos independently contribute to child outcomes (Petrill, Pike, Price, & Plomin, 2004; Pike et al., 2006).

Research Goals

Including the CHAOS scale into SOEP-IS would facilitate different kinds of research. Whereas questions 1 to 3 could be answered cross-sectionally, the scope of question 4 is longitudinal, facilitating stronger tests of the influences of home chaos.

1. **How "chaotic" are German homes?** Currently, the CHAOS scale has been applied in the USA and the United Kingdom as well as in Pakistan.
2. **What is the association between home chaos and household SES in Germany?** As described above, households with a lower income are more likely to be chaotic, for example, because smaller rooms are more likely to be crowded and noisy; yet, as can be deduced from the independent contributions of chaos and SES to child development outcomes, there must be low-income households with low levels of chaos as well as high-income households with high levels of chaos.
3. **Can international findings on the association of home chaos with child development outcomes be replicated in Germany?** SOEP includes questions on behavioral (e.g. the Strengths and Difficulties Questionnaire, SDQ), cognitive (e.g. school grades), educational (e.g. school attainment), and health outcomes of children. From an interdisciplinary point of view, the most interesting aspect of question 3 is on the relative contributions of home chaos, family SES, and parental educational aspirations and family activities to child outcomes. The relative independence of home chaos and SES also hints at the possibility of novel interventions for increasing resilience in disadvantaged homes: Does "order in the home" (Matheny et al., 1995) provide a buffer against the adverse impacts of poverty?
4. Question 4 extends question 3 longitudinally. Whereas the association of home chaos with child outcomes has been analyzed cross-sectionally in international publications (e.g. Coldwell et al., 2006; Dumas et al., 2005), much stronger conclusions could be drawn from the longitudinal and transactional analysis of home chaos and child outcomes**.** In addition to the more intuitive potential causal pathway from home chaos to adverse outcomes, there is also the possibility of transactional child-to-environment outcomes. Example of child-to-environment pathways can be found in the psychiatric literature, e.g. when "difficult" children evoke more negative parenting practices in their mothers (e.g. Harold et al., 2013). **Are home chaos and child outcomes longitudinally related as well as vice versa?** To test transactional hypotheses, a cross-lagged-panel approach is necessary where both home chaos and child outcomes (as well as control variables such as SES) are measured longitudinally.

Sample Type, Mode of Application, Response Time, and Repetition

The CHAOS scale is focused on the home environment of children and adolescents. Consequently, the preferred sample type is the subsample of the SOEP-IS of households with children and adolescents from age 0 to age 16. The original CHAOS scale is a self-report scale of 15 items (statements) with response options "yes" or "no". There is a short form of the scale with six items; for the short form, a five-point Likert-type response format scale is used (see Appendix). These items can also be administered (read out loud) by an interviewer. Administering the short form will take less than one minute, and even the full version with 15 statements will take less than two minutes. As stated above, repeating the measurement in subsequent years will unlock the full potential of research questions on home chaos.

The CHAOS scale was originally published in English (Matheny et al., 1995) and has since then been used in dozens of studies internationally. The scale has already been translated into Dutch, Japanese, Polish, Spanish, Turkish, and Urdu (Wachs, personal communication). For the German version, I have translated the English items into German, and a German-English bilingual student back-translated the German

items into English. These back-translated items have been reviewed by Ted Wachs, one of the authors of the original versions, and after that, the German items have been slightly modified to capture the content and meaning of the original items as closely as possible. I want to emphasize that the original items have been presented to and answered by thousands of participants, albeit in a paper-and-pencil questionnaire; these studies have demonstrated the psychometric reliability and validity of the original items.

It is obvious that the scale taps into a sensitive domain, and, therefore, I am ready to accept possible changes to the items deemed necessary by the SOEP team. However, SOEP already includes questions in similarly sensitive domains (e.g. values, health status, or parenting), therefore I believe it should be possible to include the CHAOS scale with only minor modifications. It should be clear that any changes to the item wording could potentially compromise the psychometric properties of the scale as well as international comparisons of the results.

Home Chaos and Existing SOEP Data

The measurement of home chaos aims at an integration of research on psychological and structural constraints on child development. SOEP already includes several questions on psychological and structural constraints in families. Yet none of these questions allows for the evaluation of the unique research questions above.

Related questions in SOEP:

- Data on the size of the housing unit, number of rooms, and number of people in household could be used to infer the amount of crowding, one aspect of home chaos, yet the CHAOS scale allows for an estimation of the person-*perceived* amount of chaos. Psychological research generally shows that the *perception* of stressors rather than the "objective" amount of stressors determines their impact.
- Child-specific questionnaires already in SOEP already contain a number of questions on parenting goals and practices as well as on parental educational aspirations and expectations. However, as described above, parenting behavior (which is formed by parenting goals, beliefs, aspirations and expectations) takes place in and *is moderated by* more or less chaotic homes such that parenting practices are less efficient in more chaotic homes (Coldwell et al., 2006).
- Child-specific questionnaires already contain a number of questions on family and child activities as well as on child care and school situation, such that the time children spend in families, in child care, or in school and other situations can be estimated. These data could actually strengthen the analysis of the effects of home chaos: Intuitively, a greater effect of home chaos would be expected the more time children spend at home.
- SOEP bioage9 questionnaire already contains questions on family mealtimes, a very important aspect of "orderly", non-chaotic homes. Yet even if families routinely take their meals together, these family mealtimes can arguably be more or less "chaotic", that is, noisy and often interrupted by "situational traffic".

Appendix

CHAOS-Scale (short version in German) and suggested framing

Framing: “Wir interessieren uns heute besonders dafür, wie Familien mit Kindern ihr Zusammenleben gestalten. Wir haben Menschen in anderen Untersuchungen danach gefragt, wie sie ihr Familienleben beschreiben würden. Ich werde Ihnen einige dieser Aussagen vorlesen, die andere Familien beschreiben, und möchte Sie bitten, anzugeben, inwieweit diese Aussagen auch auf Ihre Familie zutreffen.“

Response format: 1 = sehr unzutreffend, 2 = eher unzutreffend, 3 = weder noch, 4 = eher zutreffend, 5 = sehr zutreffend.

CHAOS-Scale:

1. Wir haben zu Hause eine regelmäßige Routine um den Tag zu beginnen. (-)
2. Bei uns zu Hause kann man sich selbst nicht denken hören.
3. Bei uns zu Hause geht es drunter und drüber.
4. Normalerweise können wir zu Hause den Überblick behalten. (-)
5. Das Telefon beansprucht einen großen Teil unserer Zeit zu Hause.
6. Die Atmosphäre in unserem Zuhause ist ruhig. (-)

(-) indicates that items scores are reversed before the scale score is calculated. Possible changes (not recommended, see main text):

Item 2: Bei uns zu Hause ist es oft so laut, dass man sich nicht konzentrieren kann.

Item 3: Bei uns zu Hause geht oft viel durcheinander.

Item 5: Das Telefon klingelt oft und unvorhersehbar.

References

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual Review of Psychology*, *53*, 371-399.

Coldwell, J., Pike, A., & Dunn, J. (2006). Household chaos–links with parenting and child behaviour. *Journal of Child Psychology and Psychiatry*, *47*, 1116-1122.

Coneus, K., & Sprietsma, M. (2009). Intergenerational transmission of human capital in early childhood. *ZEW-Centre for European Economic Research Discussion Paper*, 09-038.

Dumas, J. E., Nissley, J., Nordstrom, A., Smith, E. P., Prinz, R. J., & Levine, D. W. (2005). Home chaos: Sociodemographic, parenting, interactional, and child correlates. *Journal of Clinical Child and Adolescent Psychology*, *34*, 93-104.

Evans, G. W., Gonnella, C., Marcynyszyn, L. A., Gentile, L., & Salpekar, N. (2005). The role of chaos in poverty and children's socioemotional adjustment. *Psychological Science*, *16*, 560-565.

Harold, G. T., Leve, L. D., Barrett, D., Elam, K., Neiderhiser, J. M., Natsuaki, M. N., ... & Thapar, A. (2013). Biological and rearing mother influences on child ADHD symptoms: revisiting the developmental interface between nature and nurture. *Journal of Child Psychology and Psychiatry*, *54*, 1038-1046.

Heckman, J. J. (2007). The economics, technology, and neuroscience of human capability formation. *PNAS*, *104*, 13250-13255.

Jaffee, S. R., Hanscombe, K. B., Haworth, C. M., Davis, O. S., & Plomin, R. (2012). Chaotic Homes and Children’s Disruptive Behavior A Longitudinal Cross-Lagged Twin Study. *Psychological Science*, *23*, 643-650.

Matheny, A. P., Wachs, T. D., Ludwig, J. L., & Phillips, K. (1995). Bringing order out of chaos: Psychometric characteristics of the confusion, hubbub, and order scale. *Journal of Applied Developmental Psychology*, *16*, 429-444.

Petrill, S. A., Pike, A., Price, T., & Plomin, R. (2004). Chaos in the home and socioeconomic status are associated with cognitive development in early childhood: Environmental mediators identified in a genetic design. *Intelligence*, *32*, 445-460.

Pike, A., Iervolino, A. C., Eley, T. C., Price, T. S., & Plomin, R. (2006). Environmental risk and young children's cognitive and behavioral development. *International Journal of Behavioral Development*, *30*, 55-66.

Repetti, R. L., Taylor, S. E., & Seeman, T. E. (2002). Risky families: family social environments and the mental and physical health of offspring. *Psychological Bulletin*, *128*, 330-366.

Tamm, M. (2008). Does money buy higher schooling? Evidence from secondary school track choice in Germany. *Economics of Education Review*, *27*, 536-545.