

OLIVER NAHKUR

Measurement
of Interpersonal Destructiveness:
the Societal Perspective



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of Interpersonal Destructiveness:
the Societal Perspective



Institute of Social Studies, University of Tartu, Estonia

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LIST OF ORIGINAL PUBLICATIONS

This doctoral study is based on original publications, which will be referred to in the dissertation by their respective Roman numerals.

- I **Nahkur, Oliver;** Kutsar, Dagmar; Murakas, Rein. (2017). A Two-Dimensional Two-Layered Societal Index of Interpersonal Destructiveness: Internal Consistency Analysis. *Social Indicators Research*, 133 (2), 431–454.
- II **Nahkur, Oliver;** Kutsar, Dagmar (2019). Social Ecological Measures of Interpersonal Destructiveness Impacting Child Subjective Mental Well-being: Perceptions of 12-Year-Old Children in 14 Countries. *Child Indicators Research*, 12 (1), 353–378.
- III **Nahkur, Oliver;** Taagepera, Rein. (2019). Was Pinker on the Right Track? The Speed of Recent Decline of Violence and Gender Inequality. *Comparative Sociology*, 18(2), 148–172.

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Related studies: Nahkur, O. (2014). *Isikutevaheliste suhete destruktivse konfliktisuse indeksi konstrueerimine ja valideerimine*. Master's thesis, University of Tartu, Tartu.

AUTHOR'S CONTRIBUTION

The author of this dissertation made a major contribution to the three studies listed below:

- Study I:** The author took the lead in all phases of the study and was responsible for the writing of the article.
- Study II:** The author took the lead in all phases of the study, was fully responsible for the data analysis and a major contributor to the interpretation of the results. In addition the author was the main contributor to the write-up of the article.
- Study III:** The author took the lead in developing the theoretical framework of the study, formulating the research questions and contributed to the data analysis, interpretation of the results, and writing up of the article.

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INTRODUCTION: THE AIM AND CONTEXT OF THE STUDY

Since 2000, acts of interpersonal violence and homicide have globally killed people more frequently than wars combined (Butchart and Mikton 2014, p. 2). The actuality of the problem was notified already in 1996, when the 49th World Health Assembly adopted Resolution WHA49.25, declaring violence a leading worldwide public health problem, urging countries to assess the magnitude of the problem on their territory and requesting a science-based approach to violence prevention at both international and country level (Krug et al. 2002a, p. xx–xxi). More specifically, World report on violence and health (Krug et al. 2002b, p. 248) has pointed to the need for data which are comparable across countries and cultures, because existing gaps in information have made it “difficult to quantify the magnitude of violence worldwide and therefore to undertake global-level research or develop interventions.” WHO guide for violence prevention (Butchart et al. 2004, p. 3) emphasises that the focus should be put on interpersonal violence as such, not on its individual sub-types. In Global Status Report on Violence Prevention 2014 (Butchart and Mikton 2014) it has been stated that the knowledge of the true extent of the problem is still hindered by gaps in data. For example, the WHO survey conducted between 2012–2014 revealed that out of 133 countries less than half have conducted nationally representative prevalence surveys for most types of violence (Butchart and Mikton 2014, p. 22). Recently, in the global violence prevention field the purpose has become even more ambitious: “to measure change and to compare the outcomes of different policy regimes” (Walby et al. 2017, p. 126). Indeed, a key challenge to academics, policy-makers and practitioners working on violence prevention is absence of reliable and comparable country-level data collected at regular basis (Diprose 2007, p. 432). According to Butchart and Mikton (2014, p. 50), “at international level, the global violence prevention field has lacked the necessary indicators to establish common baselines and shared targets” on the basis of which countries can monitor their progress and advance national violence prevention efforts. Several indicators have been composed, for example the Global Peace Index, but to the best of my knowledge there is no acknowledged social indicator which specifically could estimate the level of interpersonal violence and could work as a destructiveness measure of societies worldwide in comparable and regular way. Thus, the originality of the study is in constructing such a new social indicator–Societal Index of Interpersonal Destructiveness (SIID)–combining indirect items representing different dimensions of interpersonal destructiveness.

The aim of the current doctoral study is to develop SIID that can be used as a composite indicator of interpersonal violence in different societies. It is organised around three original studies.

The objectives of the dissertation are the following:

1. To construct an index measuring interpersonal violence level in different societies in a comparable and regular way for adult population (**Study I**).

2. To test its internal consistency (**Study I**).
3. To control its conceptual workability on child population (**Study II**).
4. To control its workability in time and space (**Study III**).

The aim of the Introductory article is to give a coherent overview about the construction and validation of the Societal Index of Interpersonal Destructiveness presented in the Studies I–III. The structure of the Introductory article takes the following format: first, a theoretical background is described, including social indicator work, composite social indicators and the process of constructing them; second, methodological approach to SIID construction is walked through, including conceptualisation, operationalisation, data corpus formation, normalisations, aggregation and validation steps; third, the main findings of each study are summarized. The dissertation ends with discussion, conclusions, and summary in Estonian.

1. THEORETICAL BACKGROUND OF THE STUDY

1.1. Social indicator work

Variables that can be observed and directly measured do not need any indicator (Maggino and Zumbo 2012, p. 207). Thus, there is no such thing as an indicator in itself: every indicator points to, or is a token of, something else. Indicator is “an observation that we choose to consider as a reflection of a variable we wish to study” (e.g., attending religious services might be considered an indicator of religiosity) (Babbie 2013, p. 169). According to Bauer (1966, p. 1), social indicators are “statistics, statistical series, and all other forms of evidence—that enable us to assess where we stand and are going with respect to our values and goals, and to evaluate specific programs and determine their impact.”

Purposes and uses of social indicators

Social indicators can be used for the descriptive and explanatory purposes like social monitoring and reporting, and evaluative purposes like forecasting, accounting, program management and performance evaluation, assessment (Maggino and Zumbo 2012, p. 211; Maggino 2017b, p. 102).

Regular social monitoring and reporting is the most important and successful application of social indicators (Noll 2004, p. 163). Through monitoring it is possible to identify and define the existing problems by describing its conditions and dynamics with reference to a certain reality (e.g., country), to formulate questions and draw promptly attention to new problems, and measure changes over time (Maggino and Zumbo 2012, p. 211; Maggino 2017b, p. 102). Social reporting—as the “more or less institutionalised collection and the presentation of data which enable the evaluation of living conditions of the population and their change over time” (Noll 2004, p. 163)—goes beyond the monitoring including the possibility to analyse, interpret and evaluate the phenomenon (Noll and Berger 2014, p. 9; Noll 2018, p. 954). Social monitoring and reporting—through producing quantitative information and empirically based knowledge—seek to inform general public and policy-makers and offer self-reflection opportunity to a society or a group of societies (Noll 2004, p. 163; Noll and Berger 2014, p. 11). Social monitoring and reporting activities are important parts of the complex information systems in many countries as well as international and supranational organisations like the European Union (e.g., annual pocketbook “Living Conditions in Europe”), the OECD (e.g., report “Society at a Glance – OECD Social Indicators”) and the United Nations (e.g., Human Development Reports) (Noll 2004, p. 163; Noll 2018, p. 952). Majority of these activities are direct or indirect outcomes of the social indicators movement (Land 1983; Noll 2004; Land and Michalos 2018) which emerged in the 1960s (Noll 2018, p. 953) when for the first time economic growth as the

main goal of societal progress were questioned in some Western societies and the concept ‘quality of life’ was born as an alternative (Noll 2004, p. 152–153).

However, application and use of social indicators for evaluative purposes still seems to be problematic and questionable. Regarding Brown and Corbett’s (1997, p. iii) policy-relevant uses of social indicators, they can mainly serve as a description and monitoring tool, and less so to set goals, outcomes-based accountability and evaluation (Noll 2004, p. 167; Noll and Berger 2014, p. 11). Recently, in their assessment of the state of the field of social indicators after 50 years of development, Land and Michalos (2018) largely agree with Noll (2004); Noll and Berger (2014). Indeed, “much of the early promise of the Social Indicators Movement to develop statistics, statistical series, and all other forms of evidence—that enable us ‘to assess where we stand and are going with respect to our values and goals’ has been fulfilled, with some, but less, progress on the goal of using these indicators ‘to evaluate specific programs and determine their impact’ (Land and Michalos 2018, p. 860).”

Quality of social indicators: What is a ‘good social indicator’

To serve a purpose, a good quality social indicator is needed. Dimensions of quality of social indicators are methodological soundness, integrity, serviceability and accessibility (Table 1) as concluded by Maggino (2017b, p. 108).

It is apparent that being methodologically sound, e.g., being valid, is not enough to be a good quality social indicator. Accessibility, e.g., in terms of findability and usability, and serviceability have at least the same importance. Serviceability in the form of relevance in meeting current and potential users’ needs is especially important quality characteristic, as “quality is usually defined as ‘fitness for use’ in terms of user needs” (Nardo et al. 2008, p. 44).

Table 1. Dimensions of quality of social indicators, adapted from Maggino (2017b, p. 108)

Methodological soundness	ACCURACY AND VALIDITY	clear, meaningful, consistent	in describing the conceptual models and in relating to the defined aims and objectives
	PRECISION		in meeting requirements underlying its construction (knowing, monitoring, evaluating, accounting, ...)
	RELIABILITY		in measuring the underlying concept with a degree of distortion as low as possible
Integrity	OBJECTIVITY	transparent, ethically correct	in data collection and dissemination
	APPROPRIATENESS	relevant, credible	in meeting users' needs
Serviceability	PARSIMONY	practicable, up-to-dateable, thrifty	in observing through realistic efforts and costs in terms of development and data collection
	AVAILABILITY	well-timed, timely, punctual	in reporting the results with a short length of time between observation and communication
		periodic, regular	observing the phenomenon over time (e.g., short time between observation and data availability)
	COMPARABILITY	discriminant, disagregable	in recording differences and disparities between units, groups, geographical areas and so on
Accessibility	USABILITY	accessible, interpretable, comprehensible, simple, manageable	in being findable, accessible, useable, analysable, and interpretable

Regarding comparability, Maggino (2017b, p. 112) have stressed the following: “Comparing concepts, data and analyses over time, across territories and between groups should consider differences in geographical, linguistic, social, cultural, political, environmental, and administrative conditions as well as methodological conditions for data production (sampling design, questionnaire design, data collection methods, and so on).”

Types of social indicators from different angles

In addition to different purposes and quality, social indicators can be distinguished according to their context in which they are created, used, and interpreted; levels of communication; perspectives of observation; amount of indicators used and approaches how to synthesise indicators (Maggino and Zumbo 2012, p. 220–221; Maggino 2017b, p. 104–106). Following *contexts–where social indicators are created, used, and interpreted*–can be distinguished: *public debates* where indicators have informing, stimulating, forming and developing particular sensitivity function; *policy guidance* where indicators can influence particular policy decisions; *administrative guidance* where indicators can help to evaluate impacts of different alternatives (Maggino and Zumbo 2012, p. 220).

Regarding the target group to which the indicator will be communicated, indicators can be classified as *cold indicators*, when they have high level of complexity, difficulty and scientific quality; *hot indicators* when they are constructed at a low level of difficulty and high level of understanding; *warm indicators* when they have a good balance between comprehensibility, resonance and quality (Maggino and Zumbo 2012, p. 221; Maggino 2017b, p. 106). With reference of *perspectives of observation*, social indicators can be classified as a *status indicators* when measuring the reality in a particular moment or *trend indicators* when measuring reality across time; *objective social indicators* when representing social facts independent of personal evaluations or *subjective social indicators* when measuring individual perceptions and evaluations of social conditions; *negative social indicators* or *positive social indicators* (e.g., in the health domain, mortality from one side and life expectancy on the other side); *deprivational* (e.g., measuring only the welfare of the worst-off) or *conglomerative* (e.g., measuring overall well-being, where increases in well-being of the best-off can offset decreases in well-being of the worst-off) indicators; *benefit* or *cost* indicators; *input* or *outcome* indicators (Maggino 2017b, p. 105).

Social indicators can be distinguished also *based on the amount of indicators used and different approaches how to synthesise indicators*. Based on the amount of indicators used, social indicators can be differentiated where single indicator or multiple indicators approach is being used (Maggino and Zumbo 2012, p. 206–207). In the case of *single indicator* approach, each latent or unobservable variable is defined by a single indicator. In the *multiple indicator*

approach, latent or unobservable variable is defined by multiple indicators as multiple measures. If using multiple indicators approach, there is a choice to pick *aggregative* or *non-aggregative* way of synthesis (Nardo et al. 2008; Fattore 2017; Maggino 2017a; Mazziotta and Pareto 2017). Non-aggregative synthesising approaches, e.g., Partially Ordered Sets (POSET; Fattore 2017) or synthesis by graphical representation like dashboards (Maggino 2017a) avoid aggregation among indicators. In the case of dashboards, indicators' values are jointly shown, allowing weak and strong points to be identified; use of different colours allows the analysis of relative performance (e.g., relatively to a given level/targets or an expected value) etc. (Maggino 2017a, p. 132). According to Maggino (2017a, p. 132–133), “through the graphical display, dashboards allow comprehensive monitoring and evaluation of programmes, performances or policies”, but “does not allow complex analysis to be accomplished concerning relationships between indicators and comparisons of performance over time (trends) or across units (inter-cases comparisons)”. That kind of complex analysis is better suited for aggregate or composite social indicators described next.

1.2 Composite social indicators

Sometimes there is no single indicator that will give us the measure of a variable we really want. In this case a single indicator or data item gives us only a rough indication of a given variable, but multiple indicators or data items can give us a more comprehensive and accurate indication (Babbie 2013, p. 198). Index, also termed composite indicator (here used interchangeably), is a composite measure of a multidimensional variable—that is, measure based on more than one data item. Index is “a type of composite measure that summarizes and rank-orders several specific observations and represents some more-general dimension” (Babbie 2013, p. 199). They are formed compiling individual indicators into a single index, ideally on the basis of an underlying conceptual or theoretical framework of the issue being tackled (Freudenberg 2003; Nardo et al. 2008; Saisana and Saltelli 2011). The field of social indicators “entered a new era of the construction of composite or summary social indicators” (Land et al. 2012, p. 10) in the 1990s and 2000s. Since then, major international organisations such as OECD, the EU, UN are constructing composite indicators in a wide-ranging fields.

The advantages of composite indices (see also e.g., Maggino and Zumbo 2012, p. 219; Nardo 2008, 13–14) can be summarized in “unidimensional measurement of the phenomenon, easy interpretation with respect to a battery of many individual indicators and simplification of the data analysis” (Mazziotta and Pareto 2017, p. 162). A single composite indicator helps us to yield a single numerical value, making it “an excellent communications tool for use with practically any constituency, including the news media, general public, and elected and unelected key decision-makers” (Michalos et al. 2011, p. 13-14). Thus, composite indicators can help to inform the public, stimulate public

interest, initiate discussion (Nardo et al. 2008, p. 13), generate “narratives for advocacy in intellectual debates” (Saisana and Saltelli 2011, p. 248) and answer the policy-makers call for condensed information (Maggino and Zumbo 2012, p. 219). According to Saltelli (2007, p. 68), an index is “useful to make a point for action”, e.g., comparing the relative position of a country may bring pressure to national decision-makers. According to Noll (2018, p. 961), the demand of uni-dimensional measurement of multidimensional phenomena “seems to be greatest from a policy maker’s point of view, who not only look for possibilities to reduce the complexity of information, but also demand clear-cut diagnostic findings and conclusions”. E.g., benchmarking with the aid of composite indicator(s) can help us to measure our country performance relative to other countries, also allowing to detect areas where performance is below expectations (Freudenberg 2003, p. 8).

However, there are some risks (see also e.g., Nardo 2008, 13–14) using composite indicators, for example risk of oversimplification (Noll 2018, p. 961). In the case when composite indicator construction process lacks sound statistical or conceptual basis and/or is not transparent, it can be misused or it can send misleading policy messages (Nardo et al. 2008, p. 13). Also, such measures are subjective in their nature (Saltelli 2007), for example requiring subjective choices about normalisation, weighting and aggregation (Guagnano and Sebastiani 2018). Additionally, aggregation of indicators imply an information loss (Guagnano and Sebastiani 2018; Noll 2018, p. 961), which “especially concerns countries with big disparities between the different facets of their development” (Mueller 2018, p. 1252). Therefore, some researchers (e.g., Fattore 2017) believe one should stop once an appropriate set of indicators has been selected and not to go to the further step of aggregation to produce a composite indicator. According to Noll (2018, p. 961), “rather than debating the issue from a fundamental point of view, it might be more prolific to discuss and to prove for which specific purposes and under which conditions composite indices might be used successfully.”

For example, using non-aggregative approach might be more relevant than aggregate one for policy formulation, while an aggregate index might be more useful to make an argument for action (Nardo et al. 2008, p. 137). The best composite indicator is the one that fits to the intended purpose (Mazziotta and Pareto 2017, p. 163; Rosen 1991) and its acceptance depend on negotiation and peer acceptance (Rosen 1991; Saltelli 2007, p. 70; Saisana and Saltelli 2011, p. 249). Next, the process of ‘good quality composite social indicator’ construction is described.

1.3 Process of 'a good quality composite social indicator' construction

In the construction of 'a good quality composite social indicator' it is important to take into account: (1) the quality of basic data, and (2) the quality of procedures used to construct the composite indicator (Nardo et al. 2008, p. 45).

Quality dimensions for basic data

The selection of data used to construct the composite indicator should maximise its overall quality. In selecting the data the following dimensions should be considered: relevance, accuracy, timeliness, accessibility, interpretability and coherence (Nardo et al. 2008). These dimensions are described in Table 2.

Table 2. Description of quality dimensions for basic data, adapted from Nardo et al. (2008, p. 46-48)

Quality dimension	Explanation
Relevance	Should be evaluated considering the overall purpose of the indicator.
Accuracy	Closeness between the provided and the (unknown) true values. Credibility of data source and trust in the objectivity of the data are important. In the case of sample survey-based estimates, the major sources of error include sampling, coverage, response, non-response.
Timeliness	Length of time between the event or phenomenon and its data availability.
Accessibility	It includes the existence of reasonable opportunity to know that the data are available and how to access them; affordability of the data; the suitability of the form in which the data are available and the availability of metadata and user support services.
Interpretability	Ease with which the user may properly use, understand and analyse the data.
Coherence	Especially important are coherence across countries and over time. Coherence across countries implies that from country to country the data are based on common concepts, definitions, classifications and methodology, or that any differences are explained and can be allowed for. Coherence over time implies that the data are based on common concepts, definitions and methodology over time, or that any differences are explained and can be allowed for.

Composite social indicator quality dimensions and its construction steps

No universal method exists for composite indicator construction as it is greatly influenced by the particular application (Mazziotta and Pareto 2017, p. 162). However, the main steps for constructing a composite indicator are the following (Babbie 2013; Freudenberg 2003; Salzman 2003; Nardo et al. 2008; Saisana and Saltelli 2011; Mazziotta and Pareto 2017; Dialga and Giang 2017): (1) defining the phenomenon to be measured; (2) selecting a group of individual indicators; (3) normalising the individual indicators; (4) aggregating the normalised indicators, and (5) validating the composite indicator. These steps are interdependent, for example the choice of individual indicators is not independent from the choice of the aggregation method.

In each step of the composite indicator construction process quality concerns need to be considered. Nardo et al. (2008, p. 49) have emphasised following composite indicators quality dimensions: relevance, accuracy, credibility, timeliness, accessibility, interpretability and coherence. In Table 3, the most important links between each step of the construction process and quality dimensions are identified. However, according to Saisana and Saltelli (2011, p. 249) making proper conceptual and methodological choices to construct a composite indicator “is as much of an art as it is science”.

In the *first step*, the definition of the phenomenon should give a clear sense of what the composite indicator is measuring. It should refer to a theoretical framework, linking underlying indicators/items and specifying the relationship between the phenomenon to be measured (latent variable) and its indicators/items (Mazziotta and Pareto 2017, p. 162). It affects not only the relevance of the composite indicator, but also its credibility and interpretability (Table 3). According to Nardo et al. (2008, p. 48), “the relevance of a composite indicator is usually evaluated on the basis of analytical and policy needs, but also takes into account its theoretical foundation.” However, in addition to the theoretical or top-down, also bottom-up or democratic approach have been used to guide the selection of indicators (Barrington-Leigh and Escande 2018).

In the *second step*, the number and nature of the components of the index need to be determined. At the beginning indicators’ inclusion criteria needs to be established, then indicators are picked up according to their face validity and their empirical relationships are examined (Babbie 2013, p. 201-207). Indicators with the same directionality, which are not very highly or lowly correlated, and also corresponding to inclusion criteria are chosen. Ideally, indicators should be selected according to their relevance, accuracy, analytical soundness, timeliness, availability, accessibility, redundancy, comparability, interpretability, coherence etc. (Nardo et al. 2008, p. 23; Maggino and Zumbo 2012). The quality of chosen indicators influences composite indicator’s accuracy, credibility and timeliness (Table 3). The imputation of missing data influences the accuracy and credibility of the composite indicator (Nardo et al. 2008, p. 48).

Table 3 Links between main steps of the composite indicator construction process and quality dimensions, adapted from Nardo et al. (2008, p. 49)

Construction steps	Quality dimensions of composite indicators							
	Relevance	Accuracy	Credibility	Timeliness	Accessibility	Interpretability	Coherence	
Defining the phenomenon	x		x			x		
Selecting indicators		x	x	x				
Normalising		x				x	x	
Weighting and aggregating	x	x	x			x	x	
Validating	x	x	x				x	

As the indicators often have different measurement units and ranges, normalisation as the *third step* aims to make the indicators comparable. Additional “motivation for the normalisation is the fact that some indicators may be positively correlated with the phenomenon to be measured (positive polarity), whereas others may be negatively correlated with it (negative polarity)” (Mazziotta and Pareto 2017, p. 166). Indicators should be normalised so that an increase in the normalised indicators corresponds to an increase in the index (Salzman 2003). There are various normalisation methods: no normalisation, standardisation (or Z-scores), ranking, re-scaling (or Min-Max), distance from a reference (or Indicisation) etc. (Nardo et al. 2008, p. 30; Mazziotta and Pareto 2017, p. 166). The normalisation step is important for the accuracy, coherence and interpretability of the composite indicator (Table 3).

As a *fourth step*, combining all the components to form one or more composite indices, “requires the definition of the importance of each individual indicator (weighting system) and the identification of the technique—compensatory, partially compensatory or non-compensatory—for summarising the individual indicator values into a single number” (Mazziotta and Pareto 2017, p. 170). Compensatory aggregation technique lets low scores of some indicators to be compensated by high scores of other indicators (Maggino 2017a, p. 124). Aggregation methods “range from the simple arithmetic or geometric mean to multivariate statistical methods”, Mean-Min Function, power mean of order r , Wroclaw Taxonomic Method, Mazziotta-Pareto Index and Principal Component Analysis as examples (Mazziotta and Pareto 2017, p. 172). Almost all quality dimensions are influenced by the choice of the weighting and aggregation method (Table 3), especially accuracy, coherence and interpretability.

Fifth step, validation, aims to assess the robustness of the composite indicator, as its ability to produce correct and stable measures, and its discriminant capacity (Mazziotta and Pareto 2017, p. 180). However, Babbie (2013, p. 209, 213) emphasises internal and external validation. Internal validation is an assessment of the relationships of index components, e.g., whether each of the indicators/items included in a composite indicator makes an independent contribution or strongly overlap with other items in the measure (Babbie 2013, p. 209). According to Nardo et al. (2008), multivariate or internal consistency analysis uses several methods, like principal components analysis, factor analysis, Cronbach coefficient alpha, cluster analysis, Pearson’s correlation coefficient, and Spearman’s rank correlation coefficient. The Cronbach coefficient alpha (c -alpha) is the most common estimate of internal consistency, and it is most often used for a single uni-dimensional construct (Nardo et al. 2008, p. 72). Revelle and Zinbarg (2009) have shown that omega total and omega hierarchical may be more sensible measures of internal consistency than c -alpha. External validation is the process of testing the validity of a measure by examining its relationship to other, presumed indicators of the same variable (Babbie 2013, p. 213). However, there does not exist an index “universally valid for all areas of application, since its validity depends on the strategic objectives of the research” (Mazziotta and Pareto 2017, p. 182).

According to Mazziotta and Pareto (2017, p. 161–162), “the choice of theoretical framework, the availability of the data (in space and over time), the selection of the more representative indicators and their treatment in order to compare and aggregate them” are the main problems concerning composite indicator or index construction concern. One of the most controversial composite indicator construction steps are normalisation and aggregation which require subjective choices from the constructor (Guagnano and Sebastiani 2018, p. 978).

2. METHODOLOGICAL APPROACH TO CONSTRUCTION OF SOCIETAL INDEX OF INTERPERSONAL DESTRUCTIVENESS

Following the steps described previously, Societal Index of Interpersonal Destructiveness (SIID) is constructed. First, the underlying definitions are provided and conceptual scheme or model of SIID is developed.

2.1 Conceptualisation of violence through interpersonal destructiveness

Definitions

To understand what is meant by interpersonal destructiveness, we should first look at what interpersonal conflict is and then what makes it destructive. According to Cahn and Abigail (2007, p. 3), interpersonal conflict is a problematic situation between interdependent conflicting parties who have the perception that they seek incompatible goals or outcomes, or they favour incompatible means to the same ends; “and the perceived incompatibility has the potential to adversely affect the relationship if not addressed, and there is a sense of urgency about the need to resolve the difference”. The problem situation occurs between parties who consider their interpersonal relationship meaningful. By that definition, the problematic situation has reached a point where it needs effective management as soon as possible, to avoid adverse effects on the relationship. In this doctoral study, destructive interpersonal conflict is considered as the problematic situation where that perceived incompatibility is not addressed or not managed in a way that is mutually satisfactory, and thus has adverse effects on the relationship. Use of three conflict strategies—avoidance, accommodation, and competition—turn interpersonal conflict destructive (Cahn and Abigail 2007). Defining conflict as a situation enables us to include less visible interactions, such as purposely avoiding contact or giving each other the silent treatment. In destructive conflicts, parties are inflexible (Folger et al. 2005) and there is “a tendency to expand and escalate the conflict to the point where it often becomes separated from the initial cause and takes on a life of its own” (Cahn and Abigail 2007, p. 15). Escalation of a conflict may involve intensification of negative feelings and use of violence. Interpersonal violence, physical aggression, and abusive relationships are extreme and unhealthy types of destructive interpersonal conflict (Cahn and Abigail 2007). It would be useful to adopt a wider concept than interpersonal violence, because the latter does not grasp all the destructive strategies that individuals use in their interpersonal conflicts. This is why we use the concept of destructive interpersonal conflict. At the instrumental level, the concept of destructive interpersonal conflict is represented by the construct *interpersonal destructiveness on a micro level*.

Conceptual scheme of SIID: Linking the two dimensions and two layers of interpersonal destructiveness

According to process view and phase theory of conflict (Cahn and Abigail 2007), every conflict has a set of prerequisites. Every destructive interpersonal conflict also has consequences, which may express themselves in the same or some other relationship (Zillmann 1988; Ting-Toomey and Oetzel 2013). Hence, *interpersonal destructiveness on a micro level* can be treated as a two-dimensional construct represented by prerequisites and consequences of interpersonal destructiveness (Fig. 1).

Prerequisites of interpersonal destructiveness

Ecological models focus on a comprehensive understanding of human behaviour (Graham-Bermann and Gross 2008). According to the ecological model adopted by WHO as the basis for its program of work on interpersonal violence (Butchart et al. 2004), interpersonal conflicts are more likely to turn destructive when certain prerequisites or risk factors co-occur. There is increasing evidence that underlying the different sub-types of interpersonal violence is a set of common causes and cross-cutting risk factors (Butchart et al. 2004, p. 3). Field theory of Lewin (1951) states that human behaviour is the function of the persons and their environment. Ecological model specifies further that interpersonal violence is the outcome of interaction among factors at the individual, the relationship, the community and the societal level, and the influence of factors within a single level is as important as the interaction between factors at different levels (Butchart et al. 2004, p. 4).

According to Butchart et al. (2004, p. 4), the most common risk factors of interpersonal violence at different levels are the following. At the individual level, one of the strongest risk factors is prior history of being perpetrator or victim of interpersonal violence. Thus, prior experience of destructive interpersonal conflict should be one of the sub-dimensions of prerequisites of interpersonal destructiveness (Fig. 1). Additionally, common individual level risk factors are psychological or personality disorder, and alcohol or substance abuse. Therefore, low subjective well-being is proposed as a sub-dimension of prerequisites. At the relationship level, marital dissatisfaction or discord, violent parental conflict, and having friends that engage in violence increase the risk of destructive behaviour. In sum, poor relationship climate should be a sub-dimension of prerequisites. In addition to violent parental conflict, poor parenting practices also increase the risk of destructive interpersonal conflict. Thus, poor parenting is proposed as the next sub-dimension of prerequisites. At the community level, high unemployment, residential mobility, and crime levels, poverty, local illicit drug trade, weak institutional policies, and inadequate victim care services increase the risk of interpersonal violence. These factors are summed up as fragile community sub-dimension. At the societal level, poverty and economic inequality are the risk factors of destructive interpersonal conf-

licts. Hence economic insecurity should be one of the sub-dimensions of prerequisites of interpersonal destructiveness.

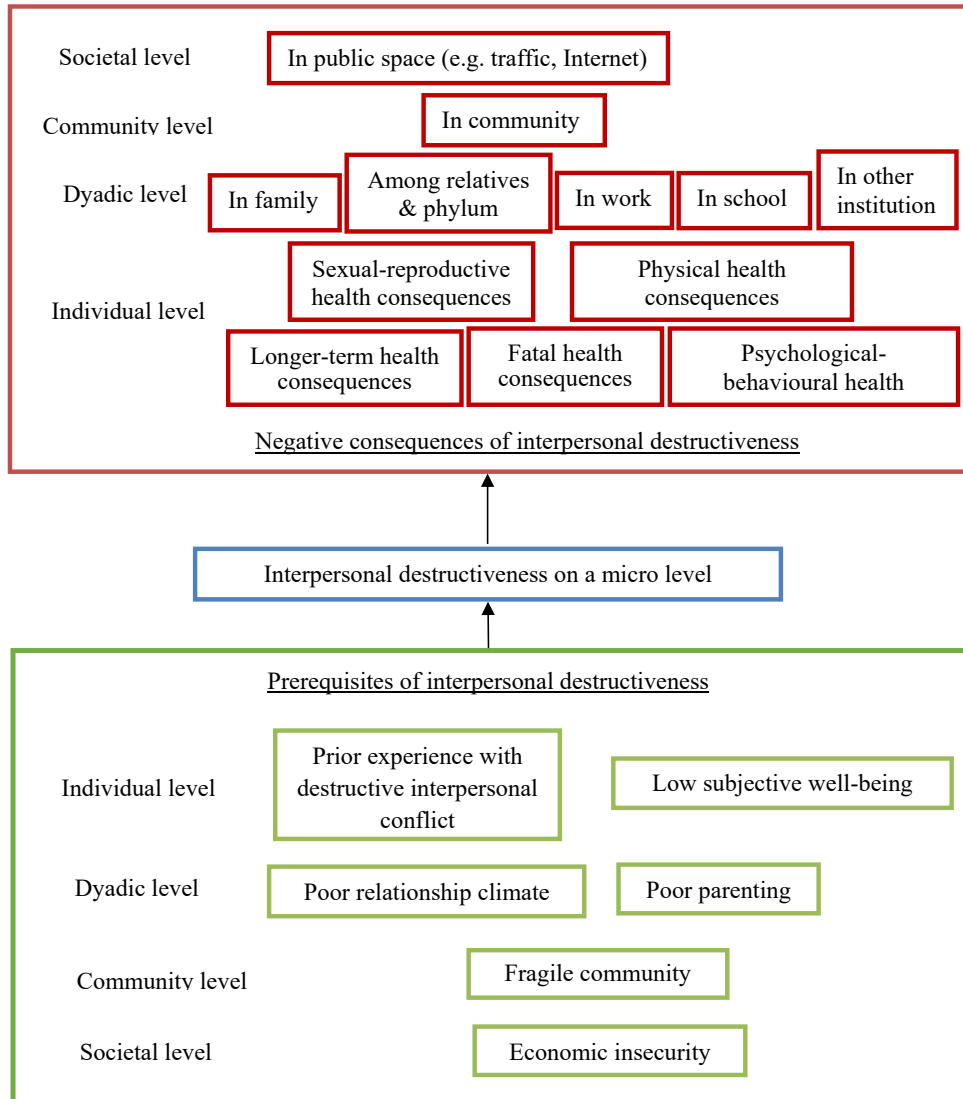


Fig. 1 Conceptual scheme of SIID

Consequences of interpersonal destructiveness

Daily conflict is one of the most reported sources of stress (Roloff and Chiles 2011). At the individual level, destructive interpersonal conflict may have physical, psychological-behavioural, sexual-reproductive, and other longer-term (e.g., cancer, ischaemic heart disease) or even fatal health consequences (Fig. 1)

(Heise and Garcia-Moreno 2002; Runyan et al. 2002). Moreover, higher distress may influence the individual’s behaviour in the conflict process or in other situations that proceed from this. According to excitation-transfer theory of Zillmann (1988), the irritation caused by one situation can transfer to other unrelated situations. For example, irritation caused by nagging in the workplace between colleagues may transfer to intimate partner relationship. At the dyadic level, the consequences of destructive interpersonal conflicts may occur in the following relationship contexts: family, relatives and phylum, work, school, other institutions (e.g., elder care homes, prisons). Consequences of destructive interpersonal conflicts may also occur in the community (e.g., neighbourhood) and in the public space (e.g., traffic and Internet).

Two layers of interpersonal destructiveness

To conceptualise the overall destructiveness in interpersonal relationships in a society, we are inspired by a “boat model” of Coleman (1990). We designate country level aggregate of different destructive interpersonal conflicts (interpersonal destructiveness cases) in its society as *interpersonal destructiveness of society* (Fig. 2). Thus, interpersonal destructiveness is a *two-layered construct* represented by prerequisites and consequences of interpersonal destructiveness, aggregated to the societal level.

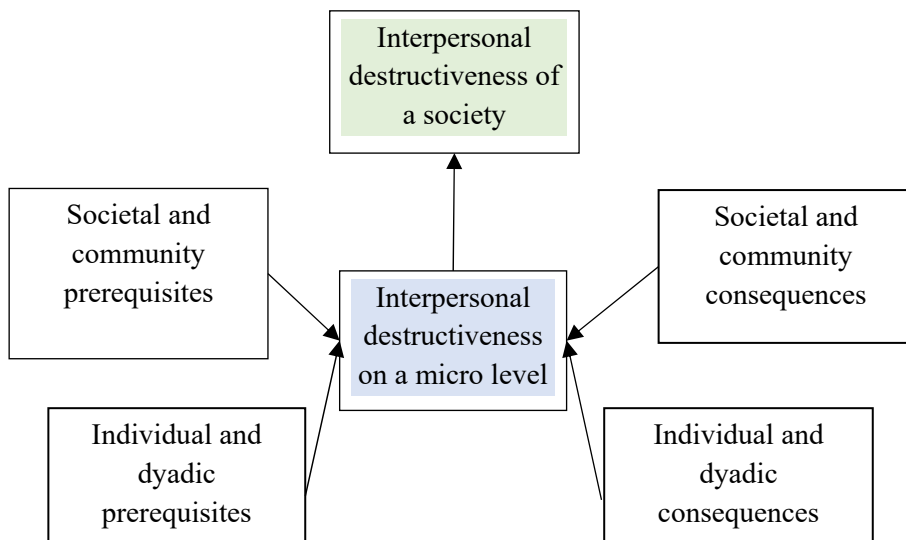


Fig. 2 Two layers of interpersonal destructiveness, inspired by “boat model” of Coleman (1990)

We suggest that in a society X, where prerequisites for interpersonal destructiveness are more prevalent, the destructive consequences should also be more widespread, so that this society can be characterised by high interpersonal destructiveness in both respects.

2.2 Operationalisation of interpersonal destructiveness

Next, according to face validity, search is carried out for relevant items for the SIID, inclusion criteria are set up and items are selected accordingly. If conceptually it is possible to talk about one version of SIID then operationally several versions of SIID must be distinguished because in **Study I and III**, where adult population data were used, the underlying dataset versions and item inclusion criteria slightly differed. Also in **Study II**, using child population data, different inclusion criteria was used but SIID was not constructed, only its sub-dimensional scores were computed. However, for the sake of clarity, the terms ‘SIID based on child population data’ or ‘child version of SIID’ and ‘SIID based on adult population data’ or ‘adult version of SIID’ are used. Subsequently, availability and quality of existing data are described, operational schemes of SIID, operationalisations of prerequisites and consequences and their sub-dimensions are addressed, both for adult and child version of SIID.

Searching items: Availability and quality of data

SIID aims to be cross-nationally comparable and regular composite social indicator, thus assuming the existence of regular internationally harmonised and comparable data. Mainly two types of interpersonal violence prevalence data exist—administrative (such as police statistics and other criminal justice data) and survey data—both having pros and cons.

Administrative data are geographically most widespread and they are also regularly collected. However, a main problem of police and other criminal justice statistics is underreporting of interpersonal violence incidents (Diprose 2007). For example, in South-Africa 50–80 % of violence victims who received medical aid did not report the incident to the police (Kruger 1998). In societies where violence as a social problem is more acknowledged, the *reporting* of violence is more common. For example, the Study of Violence Against Women in EU (FRA 2014) showed that *reported* physical and sexual violence is more common in societies where gender equality level is higher. Hence, official statistics say more about the culture of reporting interpersonal violence incidents than they do about the ‘real’ extent of violence (FRA 2014, p. 13). Moreover, definition, prosecution and conviction rates differ cross-nationally, creating comparability problems. Not only do administrative data systems “under-record the scale of violence, they also under-record it inconsistently” (Walby et al. 2017, p. 13), with the exception of homicide, “because changes in the rate of those seeking assistance from authorities may reflect changes in the willingness of victims to approach the authorities and that of authorities to record help-seeking, rather than changes in the ‘real’ rate of violence” (p. 126). Walby et al. (2017, p. 126) consider survey data the most reliable source allowing to compare the level of violence across countries and monitor the change over time.

Thus, survey data on the prevalence of interpersonal violence is considered more reliable than official statistics. Nevertheless, common criticism to survey

data is that it reflects the willingness and capacity of respondents to disclose personal experiences. The selection and levels of training of interviewers, but also ensuring appropriate support for them and respondents, can influence levels of disclosure (WHO 2013, p. 9). It is important to pay attention to with what wording the violence has been measured. According to WHO (2013, p. 9), “gold standard methods to estimate the prevalence of any form of violence are obtained by asking respondents direct questions about their experience of specific acts of violence over a defined period of time, rather than using more generic questions about whether the respondent has been “abused” or has experienced “domestic violence” or “rape” or “sexual abuse”, which tends to yield less disclosure.” According to Eller (2006), individuals from U.S, Canada and England relate spouse abuse with wider spectre of activities compared to individuals from Japan, India or Africa. The reliability of survey data can also be influenced by the method it is collected. For instance in Hungary, according to eye-to-eye interviews, 19% of women had experienced intimate partner physical violence, but after self-completion questionnaire the corresponding indicator had increased to 33% (FRA 2014, p. 33). For the sake of data comparability, it is important to use cross-culturally equivalent wordings and same survey procedures.

There are a number of multi-national, internationally comparable and regularly conducted surveys, where interpersonal violence is the main research topic, such as World Studies of Abuse in the Family Environment–WorldSAFE (Sadowski et al. 2004) and International Violence Against Women Survey–IVAWS (Nevala 2005), or where violence is a module among the others, such as Demographic and Health Surveys and Multiple Indicator Cluster Survey. The problem is that, among them, only IVAWS encompasses high-income countries in addition to low- and middle-income countries. Some regional and/or less regular surveys are conducted, such as Study of Violence Against Women in European Union, WHO Multi-country Study on Women’s Health and Domestic Violence against Women, and Violence against Children Surveys (VACS). There are also international surveys where interpersonal violence is covered only by few indicators like International Survey of Children’s Well-being. These surveys cover only violence against women and children, mainly.

National prevalence surveys are not fully comparable. Important differences may exist regarding the definition of violence, specific question wording, reference periods (previous year, adult lifetime, childhood) used, study population (for example, with the youngest and oldest age groups differing), sampling methods (ranging from population databases through to random route sampling), different survey modes (face-to-face interviews, telephone interviews, postal questionnaires; with and without interviewers) (FRA 2014, p. 15).

Overall, existing data have *reliability*, *regularity*, *narrow geographical reach* and *comparability* problems (Diprose 2007; Krug et al. 2002b). The problems with data availability and quality influence the operationalisation process of the SIID and *support the indirect measurement approach*—measuring the level of interpersonal destructiveness by factors that predispose or may be the result of destructiveness in interpersonal conflicts or relationships.

Operationalisation of Societal Index of Interpersonal Destructiveness based on adult population data

In order to make a selection among potentially suitable items, we pre-established the following 6 criteria: (1) the scope of the data should be worldwide; (2) data should be comparable across countries and cultures; (3) data should be freely accessible; (4) all items should be related to interpersonal destructiveness; (5) all items should be empirically consistent; (6) data should be available from the following time periods—1989–1993; 1994–1998; 1999–2004; 2005–2007, and 2008–2010. These unequal time periods correspond to data structure of the integrated World and European Value Survey database as of August 2013, which turned out to be a main data source for the construction of SIID in **Study I**. For **Study III**, the newer version of Integrated values survey were used, and thus items should had data from the time periods 1989-1993, 1994-1998, 1999–2004, 2005–2009 and 2010–2014, while other criteria remained the same. Defining data regularity by periods was necessary so as to be able to include more and greater diversity of societies in the Index.

Among initial 50 items chosen based on face validity, ten items corresponded to these criteria. The most filtering criteria were time and space, also data comparability across countries and cultures. According to Land and Michalos (2018, p. 859), “subjective and objective assessments are each necessary, and together they are jointly sufficient for making generally acceptable assessments.” In this Index, half of the items are based on nationally representative subjective data, and the other half on objective country-level statistical data. As there is no single data source that captures all dimensions of interpersonal destructiveness, the items come from a range of data sources: 5 of them from Integrated Database of World Values Survey and European Value Study (WVS/EVS), 2 from WHO Online Mortality Database, 2 from World Bank Open Data, and 1 from the Standardized World Income Inequality Database (Swiid).

Selected 10 items are fitted to the two-dimensional operational scheme of SIID (Table 4). Five sub-dimensions and seven items represented the prerequisites of destructiveness, as follows. The poor relationship climate and economic insecurity sub-dimensions are both represented by two items. Prior experience with destructive interpersonal conflict, low subjective well-being and poor parenting sub-dimensions are represented by one item each. We did not have data for fragile community sub-dimension, because we could not find any relevant high-quality, comparable and regular region or community level data. The consequences of destructiveness are represented by three sub-dimensions and three items. The sub-dimension ‘longer-term consequences to health’ is represented by one item. The sub-dimension of fatal health consequences is represented by two items. We decided to divide them into two separate domains because they are completely different ways of coping. We could not find any relevant data for sub-dimensions related to relationship context specific consequences and to physical, psychological and behavioural, sexual and reproductive health consequences.

Table 4 Operational scheme of SIID with the included items and their scales, ecological levels and data sources

	Item(s)	Original scale	SIID scale	Ecological level	Data type and source
Sub-dimensions of prerequisites					
Prior experience with destructive interpersonal conflict	(P1) Could you please sort out any that you would not like to have as neighbours? Drug addicts, people of diff. race, people who have AIDS, immigrants or foreign workers, homosexuals, people of diff. religion, heavy drinkers, unmarried couples living together, people who speak a diff. language	Mentioned or not mentioned	Average % of mentioned between all diff. groups	Individual	Nationally representative subjective data from WVS/EVS
Low well-being	(P2) All things considered, how satisfied are you with your life as a whole nowadays?	10 point Likert scale	% of the responses 1 to 5	Individual	Nationally representative subjective data from WVS/EVS
Poor relationship climate	(P3) Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?	Binary	% of "cannot trust"	Dyadic	Nationally representative subjective data from WVS/EVS
Poor parenting	(P4) How important are friends in your life?	4 point Likert scale	% of "not very or not at all important"	Dyadic	Nationally representative subjective data from WVS/EVS
	(P5) Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important? - Tolerance and respect for other people	Binary	% of not mentioned	Dyadic	Nationally representative subjective data from WVS/EVS

Fragile community	<i>No suitable items/data found</i>			
Economic insecurity	(P6) Men's unemployment rate	% of unemployed men in male labor force	Societal	Objective country-level data from World Bank Open Data
	(P7) Gini	Neto value	Societal	Objective country-level data from Swiid
Sub-dimensions of consequences				
Longer-term consequences to health	(C1) Life expectancy at birth	In years	Societal	Objective country-level data from World Bank Open Data
Fatal consequences to health	(C2) Assault	Standardised death rate per 100 000 inhabitants	Societal	Objective country-level data from WHO Online Mortality Database
	(C3) Death due to suicide and self-inflicted injury	Number per 100 000 inhabitants	Individual	Objective country-level data from WHO Online Mortality Database
Relationship contexts: (1) family; (2) relatives and phylum; (3) work; (4) school; (5) traffic; (6) internet; (7) community; (8) other institutions	<i>No suitable items/data found</i>			
Consequences to health: (1) physical; (2) psychological and behavioural; (3) sexual and reproductive	<i>No suitable items/data found</i>			

The relationship between ten included items and their corresponding sub-dimensions is described next.

Operationalisation of prerequisites of destructiveness and its sub-dimensions

The first sub-dimension of prerequisites of destructiveness—prior experience with destructive interpersonal conflict—is represented by entity beliefs (item P1 in Table 4). Other related beliefs may influence how individuals perceive and react to conflict (Roloff and Wright 2013). Individuals with entity beliefs believe that human attributes are fixed, and they more likely stereotype others, compared to individuals with incremental beliefs who believe that human attributes are malleable (Dweck and Ehrlinger 2006). Individuals holding entity beliefs more easily label other people and groups on the basis of little evidence, and they more likely use destructive tactics, like blaming (Yeager et al. 2011). To resolve interpersonal conflict constructively, both relationship partners should be able to admit their fault and acknowledge that one's own is not the only correct view (Dweck and Ehrlinger 2006). Dweck and Ehrlinger (2006) have shown that individuals with entity beliefs are less willing to admit their fault and use more likely self-esteem boosting behaviour at the expense of problem solving.

The second sub-dimension of prerequisites of destructiveness—low well-being—is represented by dissatisfaction with one's life (P2). Individuals dissatisfied with their life are more likely to have interpersonal conflicts (Appelberg 1996; Darbonne et al. 2013; Marum et al. 2014). Life satisfaction may also help to clarify how individuals react to different life circumstances, especially stressful or challenging ones (Bradley and Corwyn 2004), like interpersonal conflicts. Dissatisfaction with one's life is related to higher distress level and depression (Swami et al. 2007; Ní Mhaoláin et al. 2012). Depressed people demonstrate a range of maladaptive behaviours during their interactions with others (Lewinsohn 1974), including impaired problem-solving abilities (Schmaling and Jacobson 1990; Christian et al. 1994). Research has shown that more depressive symptoms were associated with more avoidance and attacking behaviours in the marriage (Nelson and Beach 1990; Marchand and Hock 2000). Life or career stress (Stith et al. 2004) and depression (Schumacher et al. 2001; Stith et al. 2004) are risk factors of intimate partner violence. Stress of parenting was strongly associated with child neglect (Stith et al. 2009). Being a victim of relational aggression in assisted living facility were related to resident's dissatisfaction with life and depression (Trompetter et al. 2011). Hansen et al. (2006) demonstrated that individuals who were bullied at workplace reported more depression than did the non-bullied respondents. Individuals dissatisfied with their life are more probable to use destructive tactics, physical and mental, in interpersonal conflicts than are individuals who are more satisfied with their life.

The third sub-dimension of prerequisites of destructiveness–poor relationship climate—is represented by the following items: mistrust of other people (P3) and low importance of friends (P4). According to field theory (Lewin 1951) the person is the perceiving actor and the environment that the person perceives is called life space. The life space as a whole has a climate, an affective atmosphere (Hample and Dallinger 1995) that predisposes to or discourages certain sorts of behaviour (Hample 2012). Climate can also be seen as a frequently occurring theme in a relationship (Folger et al. 2005). One important theme in relationship climate is support received from other people (Folger et al. 2005; Cahn and Abigail 2007). This embraces the following aspects: are relationship partners friendly or intimate; can they trust each other; can they safely share their emotions; are different opinions tolerated in the relationship; to what extent the dyad emphasise tasks versus social-emotional concerns in the relationship (Folger et al. 2005). If a person perceives that sharing one’s needs and emotions is not safe, then interpersonal conflict is more likely to turn destructive (Folger et al. 2005). In the context of intimate partner violence, one of the risk factors is low social support (Heise 2012), and neglectful or abusive parents are more likely to live in social isolation (Runyan et al. 2002).

The fourth sub-dimension of prerequisites of destructiveness–poor parenting—is represented by not valuing mutual respect in parenting (P5). Those parents who do consider mutual respect and tolerance in interpersonal relationships as an important parenting value are more likely to follow that principle in their own relationships, including child-parent and intimate partner relationships. Adolescents’ choice of conflict resolution strategy depends on the type of communication environment in the family (Singh and Nayak 2016). Mutual respect is an important interpersonal skill, which helps to resolve interpersonal conflicts in a constructive manner. Parenting styles are less likely to support secure attachment in those child-parent relationships where mutual respect is not so important, compared to those relationships where mutual respect is valued. Individuals with anxious attachment style perceive interpersonal conflict as threatening to their relationship, and this predisposes their negative behaviour towards the partner (Roloff and Chiles 2011). Individuals who do not appreciate mutual respect are probably less willing to accept the partner’s point of view, and interpersonal conflict is more likely to turn destructive.

The fifth sub-dimension of prerequisites of destructiveness–economic insecurity—is represented by the following items: men’s unemployment rate (P6) and Gini coefficient (P7). Marriage conflict is associated with poor socioeconomic household status (Conger et al. 1993) and with stress which accompanies paying bills (Papp et al. 2009). If spouses experience stress before interpersonal conflict, they are more likely to turn physically aggressive during conflict (Frye and Karney 2006). Frequent triggers for intimate partner violence are distribution of money or other family resources, and failure to meet gender role expectations (Heise 2012). Generally, in most societies men are expected to secure families’ economic well-being to a greater extent than women. Poor socioeconomic situation raises men’s distress level (Conger et al. 1993; Barnett et al. 1995).

Being unemployed favours lowering of the self-esteem and self-control (Darity and Goldsmith 1996). Insecure socioeconomic household status is associated with violence against women by their men, and also with child and elder abuse (Heise and Garcia-Moreno 2002; Runyan et al. 2002; Wolf et al. 2002). Moreover, violence can be performed in different types: e.g. physically (as more typical for men) and mentally (as more typical in women). The latter has been confirmed in studies among teenage boys and girls (Rivers and Smith 1994). Consequently men's unemployment can provoke violent behaviour of their wives as a counter-reaction and thus be a latent prerequisite of destructiveness. Also, societal or regional income inequality and male long-term unemployment is linked to violence (Pickett and Wilkinson 2015; Sanz-Barbero et al. 2015).

Operationalisation of consequences of destructiveness and its sub-dimensions

The first sub-dimension of consequences of destructiveness—longer-term consequences to health—is represented by life expectancy (item C1 in Table 4) in a country. An individuals' health is affected by his/her relationship quality (Reis and Franks 1994; McCabe et al. 1996; Ren 1997; Dalgard and Håheim 1998). For example, when intimate partners are unhappy in their relationship, continuously uncooperative, and sometimes use physical and mental violence during disagreements, then they also tend to report poor health. Interpersonal relationship quality and parties' health are affected by the strategies and tactics used in interpersonal conflict. Individuals who avoid expressing their emotions during interpersonal conflicts raise their own and partner stress level (Butler et al. 2003). Suppressing the emotions during conflict may lead to the re-accumulation of these emotions (Richards et al. 2003). In marital relationships where both parties restrain their anger, couples face a higher risk of early death than in couples where one or both express their anger (Harburg et al. 2008). Conflicts in close relationships affect inner-body processes, like virtue of blood circulation, endocrine-, and immuno-system (Wright and Loving 2011). Bad relationship, which means chronic distress to the parties, may in the case of superior-subordinate relationship increase the risk of coronary heart disease (Taylor 2006). Stress emerging from ongoing interpersonal conflict induces several physiological responses which endanger effectiveness of immuno-system, favour unhealthy stress reactions (e.g., smoking, drinking), and reduce probability that relationship partners persuade each other to take care of their health (Roloff and Chiles 2011). The more frequent psychological, physical or sexual abuse or interparental violence were in childhood, the greater were the risks of smoking, alcoholism, drug abuse, obesity, depression, suicide, cardiovascular disease, cancer, and stroke in adulthood (Felitti et al. 1998; Anda et al. 1999).

The second sub-dimension of consequences of destructiveness—fatal consequences to health: outward directed destructive strategy to cope with conflict—is represented by fatal assault rate (C2). Marital relationship is the most

common interpersonal relationship where homicides take place (Fincham 2003). Approximately 40–70 % of female murder victims are killed by their husbands or boyfriends (Heise and Garcia-Moreno 2002), many of them in the ongoing abusive relationship. Men are killed more often than women, and mostly by other men, be they strangers or acquaintances (Heise and Garcia-Moreno 2002). At least some of these murders can be consequences of destructive interpersonal conflict, e.g., in marital relationship. Actually, fatal assault rate has been used to describe interpersonal violence level in a society (Eisner 2003).

The third sub-dimension of consequences of destructiveness—fatal consequences to health: self-destructive strategy to cope with conflict—is represented by suicide rate (C3). The amount and quality of relationships are associated with an individuals' mental health (Spitzberg and Cupach 2011). Interpersonal conflicts in home or in places of study or work may favour development of hopelessness and depression (Heise and Garcia-Moreno 2002). Intimate partner violence victims are more likely to have depression and to attempt suicide (Fischbach and Herbert 1997; Olson et al. 1999; Thompson et al. 1999; Kernic et al. 2000). For example, in Scotland and Australia destructive interpersonal conflicts were associated with suicides (Cavanagh et al. 1999; Thacore and Varma 2000).

Operationalisation of Societal Index of Interpersonal Destructiveness based on child population data

The fact that there is lack of high-quality cross-nationally comparable (and regular) data representative to a child population, made the choice of data source easier. International Survey on Children's Well-Being (ISCIWEB) was the obvious choice where to search items to operationalise SIID conceptual model. The aim in **Study II** was to test SIID conceptual model—developed on adult population data—applicability to a child population by exploring the associations between prerequisites of interpersonal destructiveness and child subjective mental well-being as a consequence of interpersonal destructiveness. Thus, we searched items for all the sub-dimensions of interpersonal destructiveness prerequisites but only for psychological-behavioural health consequences of interpersonal destructiveness. After the initial choice based on face validity, the final set of items were selected according to their empirical consistency.

Selected 13 items were representing six sub-dimensions of destructiveness prerequisites (Table 5), as follows. Prior experience with destructive interpersonal conflict are represented by six items, poor parenting and economic insecurity by two items each, and low well-being, poor relationship climate and fragile community by one item. As an exception, Swiid database was used to partially cover economic insecurity sub-dimension. Psychological-behavioural health consequences of interpersonal destructiveness are represented by 1 item—Reversed 6-item version of Russell Core Affect scale.

Table 5 Operational scheme of child population version of SIID

Item(s)	Original scale	SIID scale	Ecological level
Sub-dimensions of prerequisites			
Prior experience with destructive interpersonal conflict (PD)	<p>(P1) How often, if at all, in the last month have you been hit by other children in your school?</p> <p>(P2) How often, if at all, in the last month have you been left out by other children in your class?</p> <p>(P3) How much do you agree? My parents (or the people who look after me) listen to me and take what I say into account</p> <p>(P4) How much do you agree? My parents (or the people who look after me) treat me fairly</p> <p>(P5) How much do you agree? My teachers listen to me and take what I say into account</p> <p>(P6) How much do you agree? My teachers treat me fairly</p>	<p>P1-P2: 4-point scale: “Never (0)”, “Once (1)”, “2-3 times (2)”, “More than 3 times (3)”</p> <p>P3-P6: 5-point scale: “I do not agree (0)”, “Agree a little bit (1)”, “Agree somewhat (2)”, “Agree a lot (3)”, “I do not agree (4)”</p> <p>PD = (0.5*P1 + 0.5*P2) + (0.5*P3 + 0.5*P4) + (0.5*P5 + 0.5*P6)</p>	Individual
Low well-being/ life satisfaction	<p>(P7) How satisfied are you with your life as a whole?</p>	<p>Reversed 11-point scale, from “Totally satisfied (0)” to “Not at all satisfied (10)”</p>	Individual
Poor relationship climate	<p>(P8) How satisfied are you with your relationships with people in general?</p>	<p>Reversed 11-point scale, from “Totally satisfied (0)” to “Not at all satisfied (10)”</p>	Dyadic

Item(s)	Original scale	SIID scale	Ecological level
Poor parenting (PP) (P9) How much do you agree? We have a good time together in my family (P10) How much do you agree? I feel safe at home	5-point scale: "I do not agree (0)", "Agree a little bit (1)", "Agree somewhat (2)", "Agree a lot (3)", "Totally agree (4)"	Reversed 5-point scale: "Totally agree (0)", "Agree a lot (1)", "Agree somewhat (2)", "Agree a little bit (3)", "I do not agree (4)" $PP = (0.5 * P9 + 0.5 * P10)$	Dyadic
Fragile community	(P11) How much do you agree? I feel safe when I walk around in the area I live in	5-point scale: "I do not agree (0)", "Agree a little bit (1)", "Agree somewhat (2)", "Agree a lot (3)", "Totally agree (4)"	Community
Economic insecurity	(P12) How often do you worry about how much money your family has?	4-point scale: "Never (0)", "Sometimes (1)", "Often (2)", "Always (3)"	Individual
	(P13) Gini	Neto value	Societal
Sub-dimensions of consequences			
Psychological health consequences / poor subjective mental well-being	(C1) Reversed 6-item version of Russell (1980) Core Affect scale (RCAS-6) How much you have felt this way during the last two weeks? (1) Satisfied; (2) Happy; (3) Relaxed; (4) Active; (5) Calm; (6) Full of energy.	11-point scale, from "Extremely (0)" to "Not at all (10)" Sum of these 6 items and then finding an arithmetic mean, ranging from 0 to 10.	Individual

All data from Children's Worlds survey, except Gini (Swiid)

The relationship between 14 included items and their corresponding sub-dimensions are described next.

Operationalisation of prerequisites and consequences of destructiveness and its sub-dimensions for child population

The first sub-dimension of prerequisites of destructiveness—prior experience with destructive interpersonal conflict—are represented by child’s previous interpersonal destructiveness experience in school with other pupils (items P1 and P2) and with teachers (P5–6) but also with parents or other caretakers (P3–4) (Table 5). Being a victim of child maltreatment increases the risk of destructive behaviour (Butchart et al. 2004, p. 4).

The second sub-dimension of prerequisites of destructiveness—low well-being—is represented by child’s dissatisfaction with one’s life (P7). Suldo and Huebner (2004) found in a longitudinal study conducted with adolescents that life satisfaction was predictive of later externalizing, including aggressive problems, even when controlling for the presence of initial externalizing behaviour, and thus concluded that lower levels of life satisfaction could precede the development of externalizing behaviour problems.

The third sub-dimension of prerequisites of destructiveness—poor relationship climate—is represented by child’s dissatisfaction with one’s relationships (P8). In their meta-analysis, Stith et al. (2009) found that the quality of the parent–child relationship was a strongly related factor in child neglect and a moderately related factor in physical abuse.

The fourth sub-dimension of prerequisites of destructiveness—poor parenting—is represented by child’s negative evaluation about time spent together in family (P9) and safety at home (P10). Stith et al. (2009) found that parent use of corporal punishment and parent anger/hyper-reactivity were important risk factors for child physical abuse. In families with poor parenting, feeling of unsafety at home are more likely than in families with healthier parenting practices.

The sixth sub-dimension of prerequisites of destructiveness—fragile community—is represented by not feeling safe in their neighbourhood (P11). In unsafe neighbourhoods there is greater likelihood that interpersonal destructiveness may take place (Butchart et al. 2002, p. 4).

The seventh sub-dimension of prerequisites of destructiveness—economic insecurity—is represented by the following items: child’s worry about his/her family economic situation (P12) and Gini coefficient (P13). Insecure socioeconomic household status is associated with child abuse (Runyan et al. 2002).

The sub-dimension of consequences of destructiveness—psychological health consequences—is represented by reversed 6-item version of Russell (1980) Core Affect scale (C1). Child psychological, physical (Norman et al. 2012) or sexual abuse (Fergusson et al. 2013; Hillberg et al. 2011; Andrews et al. 2004), are related to later mental health difficulties like depression and suicide ideation or

attempt. Also peer victimisation (Beilmann 2017; Estévez 2009; Hawker and Boulton 2000) is associated with children's poor mental health.

2.3 Formation of data corpus

As a separate task, SIID database(s) are formed based on its items raw data collected from various sources. In some cases, missing data were imputed.

Forming the SIID database

For **Studies I-III** separate SIID databases were formed. In Nahkur (2014), the same database was used as in **Study I**. In the case of **Study I and III** databases when a country had more than one value for an item in a given period, their arithmetic mean was used as the raw value. Single imputation, more specifically mean substitution, was used. Items' raw values were normalised, weighted and aggregated, described more in detail in the following sections.

In **Study I and III** databases—as the unit of measurement was country–nationally representative subjective data together with objective country-level statistical data were used. Objective country-level statistical data was taken from World Bank Open Data, World Health Organisation Mortality Database and Standardized World Income Inequality Database, Version 4.0 (Solt 2013). Nationally representative subjective data was taken from Integrated values survey, although different versions were used in **Study I and III**.

In **Study I**, Integrated values survey 1981–2008 was used based on World Value Survey 1981–2008 official aggregate v.20090901 from the survey website (WVS 2009) and European Values Study 1981–2008, longitudinal data file, ZA4804 Data File Version 2.0.0 (2011-12-30) (EVS 2011) from GESIS Data Archive. The European Value Survey (EVS) and the World Value Survey (WVS) are two large-scale, cross-national and longitudinal survey research programs. The EVS is being processed by the University of Tilburg and GESIS Dept. Data Archive for the Social Sciences in Cologne, the WVS by ASEP/JDS in Madrid. In order to broaden the range of comparison, both survey projects have agreed on harmonisation of items and data on basis of a common dictionary. The WVS longitudinal file 1981–2008 has been constructed from the waves 1981, 1990, 1995/1998, and 1999/2000, 2005/2008. The EVS Longitudinal Data File 1981–2008 has been constructed from the waves 1981, 1990, 1999, and 2008. For merging the two databases, the instructions (including SPSS MergeSyntax file) provided was followed. Integrated values survey 1981–2008 consists of 305 surveys and 423084 cases from 102 countries/regions. Following the waves of the values surveys, data in SIID database was structured as 1989–1993, 1994–1998, 1999–2004, 2005–2007 and 2008–2010 time periods. In **Study I**, following 62 countries data were used: Albania, Argentina, Armenia, Azerbaijan, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria,

Canada, Chile, Colombia, Croatia, Czech Republic, Cyprus, Denmark, Egypt, El Salvador, Estonia, Finland, France, Georgia, Germany, Greece, Guatemala, Hong Kong, Hungary, Ireland, Italy, Japan, Latvia, Lithuania, Macedonia, Mexico, Moldova, Montenegro, Netherlands, New Zealand, Norway, Philippines, Poland, Portugal, Puerto Rico, Romania, Russia, Serbia, Singapore, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, Thailand, Trinidad and Tobago, Ukraine, United Kingdom, United States of America, Uruguay, Venezuela.

In **Study III**, Integrated values survey 1981–2014 was used based on World Values Survey 1981–2014 Longitudinal Aggregate v.20150418 (WVS 2015) from the survey homepage and European Values Study 1981–2008, Longitudinal Data File ZA4804 Version 3.0.0 (2015-10-30) (EVS 2015) from GESIS Data Archive. The WVS longitudinal file 1981–2014 has been constructed from the waves 1981–1984, 1990–1994, 1995–1998, and 1999–2004, 2005–2009, 2010–2014. There was no new EVS waves. Integrated values survey 1981–2014 consists 364 surveys and 506268 cases from 113 countries/regions. Following the waves of the values surveys, data in SIID database was structured as 1989–1993, 1994–1998, 1999–2004, 2005–2009 and 2010–2014 time periods. In **Study III**, 26 countries data was used, because only for them it was found SIID and Gender Equality Values scores for at least three periods out of the possible five. Following countries' data were used: Argentina, Australia, Bulgaria, Chile, Colombia, Finland, Georgia, Germany, Hungary, Mexico, Moldova, New Zealand, Norway, Philippines, Poland, Romania, Russia, South Africa, South Korea, Slovenia, Spain, Sweden, Turkey, Ukraine, United States, Uruguay. Basic periods–1989–1993, 1994–1998, 1999–2004, 2005–2009 and 2010–2014–were centered on 1999–2004, average date being 2001.5. As most countries ranged over 4 periods, for change measure the distance was taken between their centers, 16 years, as the basic time interval, be it 1991 to 2007 or 1995 to 2012. SIID and gender equality scores at 2001.5 was taken as the basic value and their differences over 16 years as measures of their changes. When the actual range available was longer (21 years) or shorter (11 years), the difference was prorated by 16/21 and 16/11, respectively (and 16/10.5 for Turkey SIID). When the gender equality score was missing for 1999–2004, we averaged the scores from adjoining periods.

In **Study II** database, the unit of measurement was individual. Dataset–International Survey on Children's Well-Being (ISCIWEB) 2013/2014–with representative samples of children aged 12 in a diverse range of 14 countries or their regions around the globe–Algeria (Western region), Colombia (Antioquia state), Estonia, Ethiopia, Germany, Malta, Nepal, Norway, Poland (Wielkopolska region), Romania, South Africa (Western Cape province), South Korea, Spain (Catalonia), Turkey (Istanbul) was used. In Germany and Nepal, 4 Federal states and 6 districts in 2 development regions were selected as part of the sampling process, respectively. For society level data Standardized World Income Inequality Database, Version 5.0 (Solt 2014) were used.

2.4 Normalisation of data

As items need to be put on a common basis to avoid problems of bringing together different measurement units, items' raw values in SIID database(s) were normalised. Standardisation (or z-scores) method in **Study I and III** was used. It converts items' raw values to a "common scale with a mean of zero and standard deviation of one" (Nardo et al. 2008, p. 28); the value for each item for each society and in each time period is between 0 and 1. Ranking method, "which is not affected by outliers and allows the performance of countries to be followed over time in terms of relative positions (rankings)" (Nardo et al. 2008, p. 27), was also tested in **Study I**. Overall, the standardisation method was chosen because it is more sensitive to value differences and the number of societies varies greatly between different time periods. In **Study II**, no normalisation was used.

2.5 Aggregation of data

Subsequently, items' normalised values in SIID database(s) were weighted, aggregated and values of sub-dimensions, dimensions and overall SIID were computed there.

When normalised values of different items are combined, the question arises: are some of the items, sub-dimensions or dimensions more important than the others? Weights represent value judgments, the relative importance of SIID components. In most composite indicators equal weighting are used (Nardo et al. 2008, p. 31). Babbie (2013, p. 207) has suggested that items should be "weighted equally unless there are compelling reasons for differential weighting." As there is no evidence that some sub-dimensions are more important than others, equal weighting were applied. In **Study I and III**, to obtain the values of sub-dimensions of SIID, the contributions of the two items to each sub-dimension are weighted by 0.5. In all other cases, equal weights (1.0) are applied to the items in each sub-dimension. So, all the sub-dimensions have the weight of 1. The weighted values of the items must then be aggregated. We used linear additive aggregation method, which is summation of normalised and weighted items (Nardo et al. 2008, p. 103). This method is compensatory for each sub-dimension (a deficit in one sub-dimension can be compensated by a surplus in another), and we also tested a non-compensatory geometric aggregation (Mazziotta and Pareto 2013, p. 127) in **Study I**, but the societies' rankings were only marginally different. According to Mazziotta and Pareto (2013, p. 183) the choice of the 'best' aggregation method also depends on "the aim of the work and on the type of 'users' (researchers or people)." Among others, in this case the aim was to construct an Index that can serve as a "communication tool" for use with practically any constituency. Thus it is important that SIID uses easily understandable mathematical function. In the case of geometric aggregation, the common scale of the indicators had to be shifted to get positive values (which may be confusing). As the countries' rankings differed only

marginally using linear additive and geometric aggregation, a simpler method were preferred to use.

In **Study I and III**, to get the values of Societal Index of Interpersonal Destructiveness-Prerequisites (SIID-P) and –Consequences (SIID-C), the values of items of corresponding sub-dimensions were summed, each weight equal to 1, and multiplied SIID-C value with 7/3 (as SIID-P has seven and SIID-C only three items). The value of SIID in a given society and time period is a sum of the values of SIID-P and SIID-C, both with weight of 1, in that society and time period.

In **Study II**, only interpersonal destructiveness prerequisites sub-dimensions', specifically 'prior experience with destructive interpersonal conflict' and 'poor parenting' scores for children were computed. There, also equal weighting and summation was used. Exact equations used are shown in Table 5.

2.6 Validation of Societal Index of Interpersonal Destructiveness

As a final step, SIID was validated. Internal validity of SIID was tested in **Study I and II**. In **Study I** c-alpha, omega total and hierarchical were used to assess how well the items of prerequisites and consequences measure the uni-dimensional constructs–SIID-P and SIID-C respectively. Additionally, c-alpha and omegas were used to assess how well all included items measure the two-dimensional construct–SIID. Because SIID is not uni-dimensional, also Spearman's rank correlation coefficient was used to explore the associations between SIID's components in all time periods. Based on general distribution, c-alpha, omega total and omega hierarchical values and correlation estimates between 0 and 0.2 is considered as very weak, 0.2–0.4 as weak, 0.4–0.6 as moderate, 0.6–0.8 as strong, and 0.8–1 as very strong. Methods like principal components analysis and factor analysis were not used because of a small number of measurement units. Additionally, consistency between SIID-P and SIID-C was explored with Spearman's rank correlation coefficient but also with simple graphing and logical modelling approach (Taagepera 2014). In **Study II**, SIID workability on 12-year-old child population were controlled. More specifically, SIID's conceptual model workability was tested by exploring the child (subjective) mental well-being—as a consequence of interpersonal destructiveness—associations with prerequisites of interpersonal destructiveness at the individual, dyadic, community and societal levels. Using 14 countries data, the universality of these associations were tested across countries. Correlation and regression analyses were used, including regression models by countries and multilevel regression. More rarely used multilevel analysis (Land and Michalos 2018, p. 861) enabled to take advantage of the nested nature of the data across countries.

In **Study III**, external validity of SIID was tested through testing its workability in space and time based on 26 countries' 1989 to 2014 data. Pinker (2011) recent violence decline thesis was tested with SIID, but also the model

of exponential approach to a limit was applied to find out the speed of the claimed trend. This enabled to estimate by how many years individual societies lead or lag as compared to the worldwide average. Also, gender inequality—a risk factor of interpersonal violence—decrease and the association between SIID and gender inequality are explored. Gender inequality was measured by Welzel (2013) Gender Equality Values Index. Primary analysis method was graphical fitting of data to an exponential model.

Additionally, previously Nahkur (2014) has explored SIID associations with attitudes toward wife or child beating by their husbands or parents derived from World Values Survey waves 2005–2007 and 2010–2014, respectively, and the frequency of bullying in schools derived from Health Behaviour of School-aged Children Survey 2009/2010. Spearman's rank correlation coefficient and simple graphing was used.

3. FINDINGS

The first objective of this dissertation was to construct an index measuring interpersonal violence level in different societies in a comparable and regular way (**Study I**). To this end, a new social indicator–Societal Index of Interpersonal Destructiveness (SIID)–was constructed in **Study I**. The problems with data availability and quality influenced the operationalisation process of the SIID and supported the indirect measurement approach–measuring the level of interpersonal destructiveness by factors that predispose or may be the result of destructiveness in interpersonal conflicts or relationships. Thus, SIID turned to be a composite of two sub-indices–Societal Index of Interpersonal Destructiveness Prerequisites (SIID-P) and Societal Index of Interpersonal Destructiveness Consequences (SIID-C). The Index scores for periods 1989–1993, 1994–1998, 1999–2004, 2005–2007 and 2008–2010 were computed for 28–48 countries, depending on availability of high quality and comparative data across time. In 1999–2004, societal level of interpersonal destructiveness was highest in Russia, Ukraine, Baltics states and South Africa, and lowest in Sweden, Denmark, Norway and Netherlands (Table 6).

Table 6 Societal level of interpersonal destructiveness in 1999–2004 by countries (N=47; descending order)

Russia	21,6	Slovakia	3,2	Chile	-0,8	New Zealand	-6,5
Lithuania	15,2	Georgia	2,9	Czech Republic	-1,1	Italy	-7,3
South Africa	12,1	Macedonia	2,6	Singapore	-4,1	Canada	-7,5
Ukraine	11,9	Puerto Rico	2,6	U.S.	-4,1	Australia	-7,5
Latvia	10,8	Egypt	2,3	Portugal	-4,3	UK	-7,7
Moldova	10,3	South Korea	2,0	Finland	-4,5	Spain	-7,7
Estonia	10,2	Albania	1,7	Belgium	-4,9	Switzerland	-8,4
Philippines	8,9	Poland	0,9	Greece	-5,0	Denmark	-9,1
Brazil	7,8	Slovenia	0,7	Austria	-5,0	Norway	-9,2
Venezuela	6,7	Mexico	0,4	France	-6,0	Netherlands	-10,7
Romania	5,6	Argentina	0,2	Ireland	-6,1	Sweden	-10,9
Bulgaria	4,2	Uruguay	-0,2	Germany	-6,4		

Second objective of this dissertation was to test SIID’s internal consistency on adult population (**Study I**). Aggregated, comparable and regularly collected data for 62 different societies worldwide over the 21-year period 1989–2010 were applied, and the analyses confirmed internal consistency of SIID and its sub-indices. According to Cronbach coefficient alpha (c-alpha), omega total and

omega hierarchical, internal consistency of *SIID* was good—it varied from 0.783 to 0.881 in different time periods. Spearman’s rank correlation coefficient between *all included items* by time periods indicated that in 1994–2007, the periods where more societies were included, items had moderate (0.4–0.6) correlations most often, and in 1989–1993 and 2008–2010 correlations were most often weak (0.2–0.4). If exploring *SIID correlations with its items*, it was found that SIID was very strongly correlated with life expectancy in all time periods, mainly strongly correlated with dissatisfaction with life, mistrust of other people, low importance of friends, entity beliefs, and fatal assault. SIID was mainly moderately correlated with not valuing mutual respect in parenting. SIID had the lowest correlations with men’s unemployment rate, Gini, and suicide rate. If men’s unemployment rate and Gini were very weakly negatively and very weakly positively, respectively correlated with SIID in 1989–1993, then in other time periods they were positively and weakly to strongly correlated to SIID. SIID was very weakly correlated with suicide rate in 1994–2004 but weakly or strongly in other time periods. According to c-alpha, omega total and omega hierarchical, the internal consistency of *SIID-P* and *SIID-C* were good and moderate—it varied from 0.668 to 0.843 and 0.386 to 0.870, respectively. SIID-P was most related to low satisfaction with life and least related to men’s unemployment rate and Gini. More specifically, it was very strongly correlated with low satisfaction with life in all time periods, very weakly with men’s unemployment rate and Gini in 1989–1993 and moderately in 1994–2010. SIID-C was most related to life expectancy and least to fatal health consequences-suicides. It was very strongly correlated with life expectancy in all time periods while weakly with suicides in 1994–2004.

Also SIID-P and SIID-C were consistent—most of the societies with high level of interpersonal destructiveness prerequisites could be characterised also by high level of its consequences, and vice versa. As shown in **Study I**, in periods 1989–2004 and 2008–2010, the correlation between SIID-P and SIID-C was strong (0.622–0.728) while in 2005–2007 it was moderate (0.495). According to logical modelling approach (Taagepera 2014), the relationship between SIID-P and SIID-C in the period 1999–2004—where it is typical but especially clear-cut—is visibly curved, so that a linear correlation coefficient understates the degree of correlation. An approximate best fit would be an exponential curve: $C = -3.5 + e^{0.65P}$, where C stands for SIID-C and P for SIID-P (**Study I**). At low destructiveness prerequisites its precise level hardly affects the consequences, which remain low. Past the median level of prerequisites, the consequences start rising sharply. The only major exceptions are some East Mediterranean/Black Sea countries—post-communist Georgia, Albania, Macedonia, Romania and Bulgaria, but also Egypt and Greece. These societies managed to keep consequences low despite having some of the highest prerequisites. It is addressed in discussion section.

Third objective of this dissertation was to control SIID’s workability on child population (**Study II**). To this end, the conceptual scheme of the SIID and social ecological theoretical framework were applied to explore the associations

between prerequisites of interpersonal destructiveness and child subjective mental well-being as a consequence of interpersonal destructiveness. Study used individual level data from the 2013/2014 International Survey of Children's Well-being in 14 countries worldwide, offering substantially more precise/direct items for application of the SIID conceptual scheme to operationalise negative impacts on child mental well-being compared to the items used in the adult population version. Using correlation analysis, it was found that sub-dimensions of interpersonal destructiveness prerequisites were satisfactorily correlated to each other, except subjective and objective economic insecurity. Spearman correlation coefficient ranged from 0.255 between fragile community and poor relationship climate to 0.487 between poor parenting and prior experience with destructive interpersonal conflict. Subjective and objective economic insecurity were both very weakly related to other prerequisites' sub-dimensions. Moreover, sub-dimensions of interpersonal destructiveness prerequisites were satisfactorily correlated to a sub-dimension of consequences – poor mental well-being, except in the case of subjective and objective economic insecurity. Spearman correlation coefficient ranged from 0.263 in the case of fragile community to 0.472 in the case of low life satisfaction. Subjective economic insecurity was not significantly related to poor mental well-being while objective economic insecurity had negative ($R=-0.068$) association with poor mental well-being.

Using multilevel regression analyses, it was found that measures of interpersonal destructiveness prerequisites, such as low life satisfaction, prior experience with destructive interpersonal conflict and subjective economic insecurity as individual factors, poor parenting and poor relationship climate as dyadic factors and fragile community as community factor affect children's subjective mental well-being negatively, even after controlling for the larger social and cultural context factors (**Study II**). This universal evidence across countries was also supported by the more detailed country-specific regression analysis in the case of low life satisfaction, prior experience with destructive interpersonal conflict, poor relationship climate and fragile community. *Poor parenting* was significantly associated with children's mental well-being in majority of the countries, except in Nepal, Ethiopia, South Korea, Germany and Norway, thus could be dealt as a semi-universal determinant of subjective mental well-being in children. However, *subjective economic insecurity* (being worried about money matters of the family as a child) was not significantly associated with children's mental well-being in most of the countries, except in Algeria, Spain, Germany and Malta where it had positive affect on children's mental well-being. By examining the effects of interpersonal destructiveness measures on children's subjective mental well-being in the countries with low, moderate or high level of income inequality, higher level of subjective economic insecurity in any income inequality country group lead to higher levels of subjective mental well-being. It was found in the multilevel regression analysis that the countries' level of net income inequality– as *objective society level economic insecurity* item–effects children's mental well-being negatively only when the

30:70 ratio was used as a cut-off to split the reversed 0 to 10 RCAS-6 scale, but not with the general mean or median score (20:80 and 12:88 ratio, respectively), and if considered together with subjective society level factors (the level of national average happiness and its standard deviation), after controlling for the effects of other interpersonal destructiveness measures. The exceptionalities of subjective and objective economic insecurity are addressed in more detail in the discussion section.

Fourth objective of this dissertation was to control SIID's workability in time and space (**Study III**). In 1999–2004 out of 26 societies, the societal level of interpersonal destructiveness or violence was highest in Russia, Ukraine, Colombia, Moldova, South Africa and Philippines, and lowest in Sweden, Norway, Spain and Australia. Moreover, previously Nahkur (2014) has found that if graphing SIID-P against SIID-C, cultural regions emerge—societies with similar cultural and/or religious and/or historic background tend to locate near each other. The following cultural regions emerged: Protestant Europe, Catholic Europe, Anglophone, Latin-America, Confucian, South-Asian, African and post-communist. Thus, some of these cultural regions are similar to Inglehart's World Value Map regions while some of them differ. In Protestant and Catholic European, and English-speaking societies the low level of interpersonal destructiveness prerequisites corresponded to low level of consequences. In Latin-American and Confucian societies' middle level of prerequisites corresponded to middle level of consequences, except Brazil and Venezuela where consequences level was high. Both, interpersonal destructiveness prerequisites and consequences level tended to be high in post-communist, African and South-Asian societies with some exceptions discussed in next section. Moreover, Nahkur (2014) has found that SIID is associated with public attitudes toward wife beating by their husbands (R ranges from 0.448 to 0.633 by SIID time periods; in 2005–2007 $R^2=0.286$). In those societies where wife beating is more approved, the level of interpersonal destructiveness is higher. For example, in Sweden, Norway and Netherlands where the man's violence against his wife is considered most frequently unjustifiable and in South Africa where it is considered most frequently justifiable, the level of interpersonal destructiveness is one of the lowest and highest, respectively. SIID is also associated with public attitudes toward child beating by their parents (R ranges from 0.444 to 0.694 by SIID time periods; in 1994–1999 $R^2=0.279$) and frequency of bullying in schools in expected direction (Nahkur 2014). In the case of frequency of being bullied in the last month, R ranged from 0.390 to 0.678 by SIID time periods; and $R^2=0.519$ in 2008–2010. In the case of frequency of being a bully in the last month, R ranged from 0.516 to 0.657 by SIID time periods; and $R^2=0.386$ in 2008–2010.

Interpersonal violence, as measured by SIID, decreased from 1991 to 2012 in nearly all of the 26 countries studied (**Study III**), supporting Pinker's (2011) recent violence decline thesis. Violence decrease was accompanied by increase in gender equality values, also confirming Pinker's claim. The lower violence became in a country, the harder the further reduction was. Applying the model of exponential approach to a limit, the world average Societal Index of Interpersonal

Destructiveness (SIID, S) score decreased over time as $S=13.3(e^{-0.0132(t-2001.5)} - 1)$. Accordingly, the world average SIID score in 2012 should be $S=-1.72$, down from $+0.01$ in 2001. The actual average score for 2010–2014 was -1.67 , being fairly close. Presuming that countries follow the world average with some advance or delay, it was found that Sweden was 147 years ahead of world average level of interpersonal violence and Russia was 67 years behind, in 2001 (Fig 3). By their 2012 scores, Russia would be behind only by 37 years and Sweden ahead by 148 years. If the recent trends continue, such time intervals would become shorter, as laggards will catch up. Most cultural regions have some countries changing faster than others, with the regional average speeds remaining close to the world average. Only Catholic Eastern Europe (Hungary, Poland, and Slovenia) has been advancing much faster overall, since 1990. In **Study III**, it was also possible to define lower and upper boundaries of SIID scores for the first time as well. As interpersonal violence and gender equality values (G ; Welzel’s scale has limits 0 and 1) were tightly related as $G=1-0.120(S+12.6)^{0.466}$ ($R^2=.79$ for logarithms), total gender inequality [$G=0$, hence $\log(1-G)=0$] corresponded to $S=81.4$, being upper limit of SIID score. Lower limit of SIID score ranged between -13.3 and -12.6 .

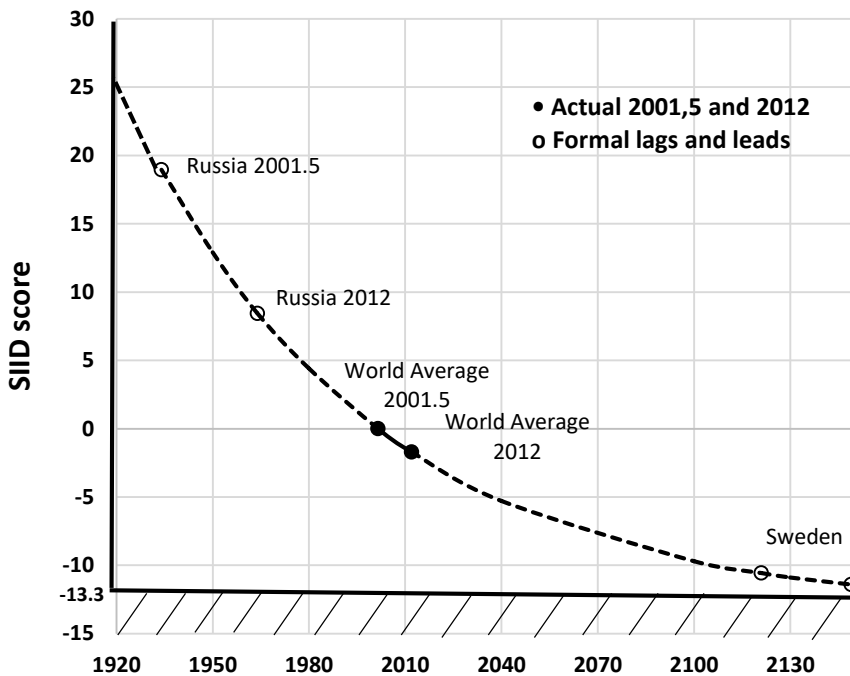


Fig. 3 Worldwide average SIID score over 2 centuries, if (and only if) the current exponential pattern $S=13.3(e^{-0.0132(t-2001.5)}-1)$ applied that long (published in **Study III** as Fig. 2)

To conclude, the findings confirmed both internal and external validity of the SIID applied to adult population. Its conceptual scheme after relevant operationalisations was also valid for child population. Moreover, it can serve comparative purposes in time and space.

4. DISCUSSION: WHAT MAKES SIID 'A GOOD COMPOSITE SOCIAL INDICATOR'? CRITICAL INSIGHTS AND FURTHER STEPS

Here, the quality of SIID, including its basic data and procedures used to construct it, are addressed. If not specified, adult version of SIID is in focus because child version of SIID has not been fully constructed yet. First, the relevance, accuracy, timeliness, accessibility, interpretability and coherence of SIID's basic data; second, methodological soundness and integrity of SIID; third, serviceability and accessibility of SIID; fourth, the limitations, and fifth, further steps are discussed.

4.1 Quality of basic data

In general, all sub-dimensions of interpersonal destructiveness are measured by data items which are relevant, fairly accurate, timely, accessible, interpretable and coherent. In terms of *relevance*, prerequisites' sub-dimension 'Prior experience with destructive interpersonal conflict' has more suitable data items measuring it in the child version of SIID compared to the adult version. Previous empirical evidence (Dweck and Ehrlinger 2006; Roloff and Wright 2013; Yeager et al. 2011) have shown that items used in the adult version can be relevant as well. Only in the child version of SIID, relevant data item for prerequisites' sub-dimension 'Fragile community' was found.

Concerning *accuracy*, items based on objective country-level data are better than items based on nationally representative subjective data. World Value Survey, European Values Study and International Survey on Children's Well-Being data may have some sampling and measurement error because existing cross-national comparative survey methodologies are not that advanced yet compared to mono-cultural surveys (Hantrais 2008), thus impacting the accuracy of data. However, these surveys are frontrunners in the cross-national comparative survey methodologies applied. *Coherence* of data provided by the Integrated values survey based on World Values Survey and European Values Study is backed by harmonisation of items and data on basis of a common dictionary. There are also previous research evidence that items used in SIID are coherent and accurate. For example, Johnson and Mislin (2012)—using Berg, Dickhaut, and McCabe 'Investment Game' (also known as 'Trust Game') across 35 countries from North America, Europe, Asia, South America and Africa (more than 23000 subjects)—found that trust measured by the WVS was strongly correlated with experimentally measured trust. According to Fors and Kulin (2015) single-item measure of life satisfaction ("All things considered, how satisfied are you with your life as a whole nowadays?") reliably captures life satisfaction, at least in the aggregate and in a European context. Diener et al. (2012) have shown that life satisfaction of nations (N=97) from the 2007 Gallup World Poll and 1995–2007 World and European Value Surveys were strikingly

similar ($r = 0.94$). For data items from International Survey on Children’s Well-Being—a relatively new survey—there are less evidence about their comparability over time and space. Also objective data may have problems with comparability, for instance in case of measuring thefts and robberies: differences can be found in legal definitions, methods of counting or recording across countries. Objective data items used in ‘fatal health consequences’ and ‘longer-term consequences to health’ sub-dimensions are comparable across countries and cultures, as they are less influenced by different legal definitions or recording practices.

As set one of the selection criteria, all data items used in SIID are easily *accessible*. The data is freely downloadable from the data source websites. Objective data items are more *timely* compared to subjective data items from surveys. For example, subsequent waves of World Values Survey are planned every five years and International Survey on Children’s Well-Being approximately every three years. *Interpretability* of data items used in SIID are ensured by existence of adequate metadata provided by sources of data. Overall, the chosen items and its data are the best that could be found at the moment.

4.2 Methodological soundness and integrity of SIID

Methodological soundness

Methodological soundness of SIID is supported by the fact that its construction followed internationally accepted guidelines (Babbie 2013; Freudenberg 2003; Salzman 2003; Nardo et al. 2008; Saisana and Saltelli 2011; Mazziotta and Pareto 2017; Dialga and Giang 2017).

Methodological soundness is most about its accuracy and validity (Maggino 2017b; Nardo et al. 2008). SIID’s accuracy and validity is supported by the quality of its basic data and yielding similar results if testing different normalisation–standardisation and ranking–and aggregation–linear additive and geometric–methods (**Study I**), and validating it through different methods described in section 2.6. First, if exploring internal consistency of SIID, (1) all items of SIID, (2) SIID and its items and (3) SIID-P or SIID-C and its items were satisfactorily correlated to each other (**Study I**). Based on child population data (**Study II**), consistency between sub-dimensions of interpersonal destructiveness prerequisites but also between sub-dimensions of prerequisites and sub-dimension of psychological health consequences were also good. The notable exceptions in **Study I** were economic insecurity sub-dimension items in 1989–1993 and fatal health consequences-suicides particularly in 1994–2004, and in **Study II** subjective and objective economic insecurity did not function as well in the SIID conceptual scheme as other sub-dimensions. The exceptionality of fatal health consequences-suicides in 1994–2004 may be explained by the fact that in some societies norms do not favour committing or reporting suicides and in that period the number of such societies were higher than in other periods. Indeed, as in 1994–2004, fatal health consequences-suicides was very weakly

correlated with SIID and weakly with SIID-C, then in 2008–2010 the correlations were strong and very strong, respectively. In 2008–2010 period, the Latin American and post-communist Caucasian region societies, where societal norms do not favour suicides but interpersonal destructiveness level is quite high, were not included. During 1989–1993, eleven post-communist and Latin American societies out of 28 societies in focus went through rapid societal transitions. Therefore, different functioning of economic insecurity items—men’s unemployment rate and Gini—in 1989–1993 period can be explained by rapid societal changes taken place in these societies, which particularly influenced economic insecurity sub-dimension. In **Study II**, it occurred that in some societies, higher level of subjective economic insecurity lead to higher levels of subjective mental well-being. This can be explained by recent findings of Cho (2017), showing that the effect of children’s material deprivation on their subjective well-being is mediated by their family relationships and friendships. One may hypothesise that in a family with tight mutual relationships children’s mental well-being is safeguarded by mutual love and caring, and children in these families are also involved in money matters of the family. Consequently, a child in a secure family may express more concern about family money matters than a child living in a less coherent family setting. On contrary, feeling economically insecure (and relatively deprived) is related to other forms of relative deprivation, such as social and psychological that leads to lower subjective well-being and risk of social exclusion (Kutsar 2015; Ridge 2002). With reference to Ridge (2009), economically disadvantaged children express concern that there may not be enough money to meet their and their family members’ needs, thus, mental well-being of these children may be at stake. To sum, even when the subjective economic insecurity measure does not show clear determination of subjective well-being, the interactions between subjective economic insecurity and mental well-being mediated by family patterns, thus can be dealt as universal. The influence of objective economic insecurity on children’s mental well-being stayed unclear. In line with previous studies (Lee and Yoo 2015; Klocke et al. 2014) focusing on overall child well-being, the findings of the **Study II** indicated that children’s immediate surroundings like family, school and community, influence children’s mental well-being from children’s perspective more than larger social and cultural context factors. Children’s assessments may reflect their direct and indirect interactions with different levels of social ecological environmental settings that are merged in their opinions. Thus, high consistency between data collected from children and society level data (Gini) are not likely because the latter does not represent children’s opinions.

Consistency between prerequisites and consequences of interpersonal destructiveness was also supported (**Study I**), as SIID-P and SIID-C tend to measure the same latent construct from different angles. For example, most of the societies with high level of interpersonal destructiveness prerequisites can be characterised also by high level of its consequences, and vice versa. Thus, the general processes tend to dominate over cultural explanations in SIID. How-

ever, major exceptions were some East Mediterranean/Black Sea countries—post-communist Georgia, Albania, Macedonia, Romania and Bulgaria, but also Egypt and Greece. These societies managed to keep consequences low despite having some of the highest prerequisites. Surprisingly, all these societies have common background—they all have belonged to Ottoman Empire. The existence of such exceptional group of societies poses the question—is SIID working in these countries or not? If SIID is also functioning in these societies then some internal mechanism should exist there, which limits the consequences of interpersonal destructiveness. One such mechanism can be effective social control supported by autocracy traditions from the Ottoman Empire. According to Pinker (2011, p. 105), “established autocracies keep close tabs on their citizens and punish them surely and severely when they step out of line” (Pinker 2011, p. 105). However, in some domains the line can be quite far as evidence have shown that women in Muslim cultures are at higher risk of abuse (Younes 2014). Regarding intimate partner violence, one in three women in Egypt is physically abused by a spouse, with blame resting on her misbehaviour and justified by the Koran (Douki et al. 2003).

SIID seemed to produce logical rather than illogical results in terms of space (**Study I and III**). For example, in Russia and other post-communist societies the societal level of interpersonal destructiveness was higher compared to Sweden and other Protestant European societies. Societal level of interpersonal destructiveness was strongly related to gender equality values (**Study III**), but also with attitudes toward wife and child beating by their husbands and parents, respectively, and the frequency of bullying in schools (Nahkur 2014). SIID also seemed to work in time, as it confirmed Pinker’s (2011) recent violence decline thesis (**Study III**). The decrease was most notable in Catholic Eastern European countries like in Hungary, Poland, and Slovenia since 1990 corresponding to fall of Iron Curtain. It may make sense because these societies were more loosely related to Soviet Union, positioning geographically and culturally closer to older Europe characterised by lower level of interpersonal violence. In other former Soviet Union societies, the decrease has been also notable but more turbulent. For example, in Russia, Ukraine and Romania the level of interpersonal violence increased between 1996 to 2002, but decreased again thereafter. Among 26 countries ranging geographically from South Africa to Sweden, only in South Korea the level of interpersonal violence has consistently increased. Historically, in South Korea there has been patrilineal household system (*hojuje*) characterised by saying, “Dried fish and women are better after they are beaten” (Chung and Ok 2014, p. 83). Interpersonal violence started to increase since the end of the 1990s, corresponding to ratification of Domestic Violence Prevention Law in 1997 (Chung and Ok 2014). This trend has marked the rise of violence as a public issue—invisible became more visible—in South Korea. It is supported by the notable increase in gender equality values in South Korea between 1996 to 2001 (**Study III**). Later the level of gender equality has slightly decreased or not changed much, being in 2012 similar to South Africa or Russia. However, is interpersonal violence truly

increased or increased only in public perceptions of South Koreans? According to Chung and Ok (2014), while family policy is moving toward gender equality, family life in reality has been slow to change. As SIID is indicating the true increase, then maybe it is possible that tensions between South Korean men and women have increased, resulting the increase in interpersonal violence. According to Lee (2018; ISA presentation), gendered fear and spatial insecurity perceived by women have increased in the past two decades, manifesting in Gangnam Femicide in 2016. Possibly, also the intensified competitiveness (Chang 2018; Son 2018) in South Korean society may play a role in violence increase.

Integrity

Integrity of SIID is supported by the transparency of data and its sources used. All data sources used to construct SIID, have published information on specifics of data collection and handling, supporting the integrity of SIID. However, at the moment SIID databases have no public access.

4.3 Serviceability and accessibility of SIID

Serviceability

Serviceability of SIID largely depends on its appropriateness, e.g. relevance and credibility in meeting its users' needs but also on its comparability (or coherence over space and time) and availability, including its timeliness.

Relevance

First, the relevance of SIID in terms of users' needs is addressed. A key challenge to academics, policy-makers and practitioners working on violence prevention is absence of reliable and comparable country-level data on interpersonal violence collected at regular basis (Diprose 2007, p. 432). Existing gaps in information have made it difficult to regularly quantify the magnitude of violence worldwide, to undertake global-level analysis, develop interventions (Krug et al. 2002b, p. 248), establish common baselines and shared targets on the basis of which countries can monitor their progress and advance national violence prevention efforts (Butchart and Mikton 2014, p. 50). To fill that information need, SIID is constructed providing a composite indicator of a variable "Interpersonal destructiveness of a society". Thus, SIID is relevant composite social indicator meeting the needs of academics, policy-makers and practitioners working on violence prevention. Actually, also general public, media, interest groups, statisticians and international organisations could be regarded as users of SIID. Different user groups' needs are not equally covered though. As SIID is aimed to be a 'warm indicator' showing a good balance between quality, comprehensibility and level of understanding or resonance, it can contribute to descriptive and explicative purposes like social monitoring

and reporting. Through regular social monitoring and reporting, SIID has the potential to enlighten/inform the public, stimulate public interest, initiate discussion, and form and develop particular sensitivity function; to offer a ‘food’ for media’s appetite for statistic-based narratives; and to be a lobbying tool for interest groups. SIID has also potential to be a new social indicator which statisticians will add to their indicator system and international organisations like WHO will use in their next Global Status Report on Violence Prevention or in other violence prevention initiatives (e.g., Violence Prevention Information System).

*Regarding Brown and Corbett’s (1997, p. iii) policy-relevant uses of social indicators, SIID can mainly serve as a regular description and monitoring tool, and less so to set goals, outcomes-based accountability and evaluation. For example, SIID could be considered as a monitoring tool for Sustainable Development Goal 16 target 1 “Significantly reduce all forms of violence and related death rates everywhere” (United Nations 2019). However, as a country level social indicator it is less suitable “to evaluate specific programs and determine their impact” (Bauer 1966, p. 1), which have growing demand in the fields of policy making (Noll 2004, p. 176). According to Shek and Wu (2018, p. 983), “Macro social indicators such as indicators at the national level may not be sensitive measures for social programs, which may be more individualistic and community-based.” In that sense, SIID is less suitable to address the needs of policy-makers or practitioners who would like to evaluate the impact of their specific violence prevention program. But SIID can also contribute to some extent to evaluative purposes. According to Noll (2018, p. 961), social monitoring and reporting can be more attractive—particularly for policy-makers—by incorporating elements of social forecasting. In **Study III**, a very preliminary attempt to forecast the level of interpersonal violence exists.*

*SIID may have following academic uses: Comparative data is needed to test theories (Walby et al. 2017). Academics can use SIID—as a cross-nationally comparable and regular interpersonal violence measure—to test theories and hypotheses related to societal level of interpersonal violence. For example, in **Study III** Pinker’s (2011, 2018) recent violence decline thesis was tested using SIID. However, SIID as a negative social indicator can be also considered as a specific measure of societal ill-being/ negative well-being (Glatzer 2015) or suffering (Anderson 2013, 2015). Moreover, SIID can be of use because of the recently developed focus on world suffering and ill-being indices and trends which is an emerging theoretical perspective in social indicators/quality-of life/well-being research field (Land and Michalos 2018, p. 864). Among others, SIID as a societal ill-being or suffering indicator would complement numerous existing positive well-being and thriving indices. In the suffering framework, interpersonal destructiveness is mostly related to one type of suffering—interpersonal suffering—“defined as distress inflicted by a primary group: family, friends, or people with whom one might have had regular contact” (Anderson 2015, p. 5). For example, it could be social rejection or forced social isolation. According to Land et al. (2015, p. 178), much cross-national research on*

children has pursued a well-being, rather than a suffering perspective, at least among the more developed countries of the world. Moreover, “available indicators of child suffering are very limited, concentrated among indicators of health and education” (Land et al. 2015, p. 178). Child population version of SIID can be used as a measure of child interpersonal suffering.

However, we can relate SIID also with the concept of *hygge* (in Danish; the Norwegians have *koselig*, the Swedes *mysig*, the Dutch *gezenligheid*, and the Germans *gemütlichkeit*). According to Linnet (2011, p. 22-23), “references to its meaning in eighteenth-century Norwegian centre on such connotations as the safe habitat; the experience of comfort and joy, especially in one's home and family; a caring orientation, for example, toward children; a civilized mode of behaviour that other people find easy to get along with, one that soothes them and builds their trust.” According to the Oxford dictionary, which added the word in June 2017, *hygge* refers to high-quality social interactions (Helweg-Larsen 2018). In that sense, we can consider a case of interpersonal destructiveness on a micro level as a case of anti-*hygge* or low-quality social interaction. *Hygge* is also seen as a cultural concept (Linnet 2011). For example, *hygge* is fully integrated into the Danish culture as most Danish social events are expected to be *hygge*-like. Thus, high-quality and productive interpersonal social interactions tend to be a norm in Danish society. In other words, Danish society is characterised by productive interpersonal communication culture as opposed to destructive interpersonal communication culture (interpersonal destructiveness of a society). Societies’ interpersonal destructiveness can be considered something opposite to *hygge*—people having unsafe, unbalanced and inharmonious interpersonal experiences. Thus, to develop the *hygge*-related theory or research, reversed SIID could be used as a proxy indicator of societies’ level of *hygge*.

Comparability

SIID comparability in space and time was supported in **Study III** and Nahkur (2014). Many concepts do not travel well across national, social or cultural boundaries. Interpersonal destructiveness or violence can certainly be such concept when measured directly, e.g., by generic questions about whether the respondent has been “abused” or has experienced “domestic violence”. Direct questions about the experience of specific acts of violence over a defined period of time would be more transportable. However, such type of internationally comparable and regular data is lacking. International regular indicators/items which are indirectly related to interpersonal destructiveness and used in SIID can travel over national boundaries. Comparability of SIID across population groups (children and adults) was supported indirectly in **Study II**.

Timeliness

SIID is a regular index having scores usually for five year periods—1989–1993, 1994–1999, 1999–2004, 2005–2009, 2010–2014 and 2015–2019. Preparation for the 7th wave of WVS started in 2015, and to be conducted worldwide in 2017–2019 (WVS 2019). Subsequent waves are planned every five years. Data and all related survey documentation will be made available at the WVS website in free access by mid-2020. EVS 5th wave fieldwork started in September 2017 (EVS 2019). Full Data and documentation Release planned for end 2019. Objective statistical data is updated more frequently than subjective data. Thus, the length of time between the availability of new SIID data and the phenomenon it describes are several years. As shown in **Study III**, overall the societal level of interpersonal destructiveness did not change very rapidly over time.

Accessibility

Accessibility of SIID depends on how easily usable, including how accessible and interpretable it is. So far, SIID is in the development phase where its data are not made publicly available yet. Until now, the underlying data is presented in the published study and/or is available ‘on demand’. However, SIID aims to be a ‘warm indicator’ showing a good balance between quality, comprehensibility and level of understanding or resonance. For example, relatively easily understandable normalisation, weighting and aggregation methods are used. Also clear description of conceptual framework has enhanced the interpretability, although standardisation may not be the best choice in this sense, because the values ranging $-x$ to $+y$ are not that intuitive than for example values ranging from 0 to 1.

4.4 Limitations

It would be useful to have greater geographical variability of the data. Gallup World Poll could offer that, but its accessibility is limited due to the high user fees and the data representability could be an issue. Having new SIID score in every five years and not for specific year can make it less attractive to policy-makers. The fact that the SIID does not give scores for different population groups or smaller geographical units than countries is certainly a limitation. Survey conducted in 2018 among International Society for Quality of Life Studies (ISQOLS) members revealed that among Top 10 future research topics in social indicators/quality-of life/well-being studies should be the development of new measures and indices concerning specific groups like refugees, immigrants and mothers (Michalos and Land 2018).

Although in the conceptual model of SIID, interpersonal destructiveness consequences had more sub-dimensions compared to prerequisites, SIID-P is more populated with data compared to SIID-C. For interpersonal destructiveness consequences, only the individual level health consequences data were

found. Moreover, two out of three were *fatal* health consequences which are quite extreme outcomes of interpersonal destructiveness.

As a limitation, using cross-sectional data in **Study II**, causality between interpersonal destructiveness prerequisites and a consequence could not be proved across countries. To do that, longitudinal data is needed. However, to the author's knowledge there is no cross-national longitudinal data, which could be used to test it. Hopefully, the first comparative Europe wide longitudinal survey on child and young adult well-being, named EuroCohort, will provide such data in the future.

4.5 Further steps

Despite using different normalisation and aggregation methods in **Study I**, SIID robustness needs further checks. For example, more imputation, normalisation, weighting and aggregating methods can be tested. E.g., SIID's internal consistency/validity are planned to test with factor analytic and SEM approach, which are sensitive to small-sample problems, during the further development process when collecting more measurement units. Lately, the number of participating societies in World Values Survey, as one of the main databases in SIID, have increased.

In addition to aggregative-compensative approach used in SIID there are also non-aggregative data synthesising approaches, e.g., Partially Ordered Sets (POSET) or synthesis by graphical representation like dashboards (Maggino 2017a; Fattore 2017). Although it seems that it is mandatory to choose only one or another approach, it may not be so. According to Boelhouwer (2018, p. 1031), "a 'dashboard' consisting of a limited set of indicators and an index which summarises those indicators need not be mutually exclusive." For example, using non-aggregative approach might be more relevant than aggregate one for policy formulation, whereas an aggregate index might be useful to make an argument for action (Nardo et al. 2008, p. 137). Actually, in the case of SIID, it is also possible to disaggregate it and use its dimensional, sub-dimensional and individual indicator scores. It should be one of the further steps to analyse these scores in time and space.

Despite addressing external validity of SIID in **Study III** and previously by Nahkur (2014), more evidence is needed. For instance, a meta-analytic review about the results of existing country level interpersonal violence prevalence measures compared to SIID results has been started but it needs to be finished.

SIID minimum and maximum scores need further explorations. According to **Study III**, SIID score in Sweden and Norway seems to be almost at its ideal level—around -10 in the past decade. However, considering the values of indices' sub-components, then it seems that the level -13 cannot be the lowest value of SIID occurred in the **Study III**. Its sub-components' values can be smaller and thus SIID score should be smaller as well. Another way to get the lowest SIID score would be to take the ideally lowest sub-components' values, which would mark the ideal lowest SIID score.

However, further revisions in SIID are expected for instance in parallel with improvements in the availability of internationally harmonised and regularly collected data. Moreover, further exploration of the possibilities to construct SIID for different population groups, including calculating SIID scores for children. Child version of SIID could be considered as an indicator for Sustainable Development Goal 16 target 2 “End abuse, exploitation, trafficking and all forms of violence against and torture of children” (United Nations 2019).

Also, in the further development process SIID source data should be made publicly available together with metadata and assistance to data users. It is important to decide if SIID should follow “One style fits all” versus tailor-made social indicators approach addressing different groups of potential users differently. There are growing attempts at least to reach out to different groups of potential users, and better reach to diverging needs through traditional print products, on one hand, and web-based interactive tools, on the other. Examples of this sort of combined dissemination strategies include the OECD’s Better Life Initiative (Better Life Index and How’s Life Report). In line with these recent developments, further differentiations among the products and services offered may enhance the attractiveness of SIID for different categories of users.

CONCLUSIONS

An important challenge to academics, policy-makers and practitioners working on violence prevention is absence of worldwide reliable and comparable country-level data collected at regular basis (Butchart and Mikton 2014; Diprose 2007; Krug et al. 2002b; Walby et al. 2017). Thus, following internationally accepted guidelines (Babbie 2013; Freudenberg 2003; Salzman 2003; Nardo et al. 2008; Saisana and Saltelli 2011; Mazziotta and Pareto 2017; Dialga and Giang 2017), a new composite social indicator–Societal Index of Interpersonal Destructiveness (SIID)–was developed in this doctoral study that can be used as a regular and cross-nationally comparable indicator of interpersonal violence across societies. SIID uses existing regular internationally harmonised and comparable data. It is a two-dimensional index combining indirect items representing prerequisites’ and consequences’ dimensions of interpersonal destructiveness. The results of this dissertation showed methodological soundness of SIID. It can be concluded that:

- SIID is internally consistent composite social indicator (**Study I and II**);
- after relevant operationalisations, SIID conceptual scheme can also be applied to child population (**Study II**);
- SIID can serve comparative purposes in time and space (**Study III**);
- SIID can be further improved and adapted to new population groups with improvements in the availability of internationally harmonised and regularly collected data.

Additionally, general public, media, interest groups, statisticians and international organisations could be regarded as potential users of SIID. Through regular social monitoring and reporting, SIID has the potential to enlighten/inform the public, stimulate public interest, initiate discussion, and form and develop particular sensitivity function; to offer a ‘food’ for media’s appetite for statistic-based narratives; and to be a lobbying tool for interest groups. SIID has also potential to be a new social indicator which statisticians will add to their indicator system and international organisations like WHO will use in their next Global Status Report on Violence Prevention or in other violence prevention initiatives.

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SUMMARY IN ESTONIAN

Isikutevahelise destruktiivsuse mõõtmine: ühiskonna tasandi perspektiiv

Usaldusväärsete, riigiti võrreldavate, ülemaailmselt ja regulaarselt kogutavate andmete puudumine on vägivaldaennetusega tegelevatele teadlastele, poliitika kujundajatele ja praktikutele oluliseks probleemiks (Butchart and Mikton 2014; Diprose 2007; Krug et al. 2002; Walby et al. 2017). Rahvusvaheliselt tunnustatud juhiseid (Babbie 2013; Freudenberg 2003; Salzman 2003; Nardo et al. 2008; Saisana and Saltelli 2011; Mazziotta and Pareto 2017; Dialga and Giang 2017) järgides keskendus käeolev doktoriuurimus uue sotsiaalse indikaatori–Ühiskonna isikutevahelise destruktiivsuse indeksi (Societal Index of Interpersonal Destructiveness; SIID)–konstrueerimisele ja valideerimisele. Indeksiga saab mõõta isikutevahelise vägivalda taset ühiskonna tasandil regulaarselt ja riigiti võrreldavalt.

SIID on kahetasandiline ja -mõõtmeline indeks. Ühiskonna isikutevahelise destruktiivsuse/vägivalda taset käsitletakse ühiskonnas aset leidnud isikutevaheliste destruktiivsete konfliktide kogumina. SIID ühendab isikutevahelise destruktiivsuse eeldusi ja tagajärgi esindavaid kaudseid näitajaid. See tähendab, et ühiskonna isikutevahelise destruktiivsuse taset mõõdetakse selle eelduste (alaindeks SIID-P) ja tagajärgede (alaindeks SIID-C) tasemete kaudu. Probleemid andmete kättesaadavusega ja kvaliteediga toetasid kaudse mõõtmise valikut. Indeksi kontseptuaalse skeemi kohaselt satuvad inimesed, kellel endast, enda suhetest, ümbritsevast kogukonnast ja ühiskonnast tulenevaid eeldusnäitajaid enam, sagedamini isikutevahelistesse destruktiivsetesse konfliktidesse, millel on tagajärjed samuti nii indiviidi enda, tema suhete, kogukonna kui ka ühiskonna tasandil. Indeks on indiviidi tasandi eelduste dimensioonideks eelnev isikutevahelise destruktiivse konflikti kogemus ja madal subjektiivne heaolu; diaadi tasandi eelduste dimensioonidena kehv suhtekliima ja kehv vanemus; kogukonna tasandi eelduste dimensioonina habras kogukond; ühiskonna tasandi eelduste dimensioonina majanduslik ebakindlus. Indiviidi tasandi tagajärgede dimensioonideks on pikemaajalisemad, fataalsed, psühholoogilis-käitumuslikud, seksuaal-reproduktiiv, füüsilised tervise tagajärjed; diaadi tasandi tagajärgede dimensioonideks perekond, suguvõsa, töökoht, kool, muu institutsioon; kogukonna tasandi dimensioonina kogukond; ühiskonna tasandi dimensioonina avalik ruum (nt Internet, liiklus).

Indeks tugineb olemasolevatel regulaarselt kogutavatel, rahvusvaheliselt harmoniseeritud ja riigiti võrreldavatel andmetel. Indeks kasutatakse riikide elanikkondadele esinduslike küsitlusuuringute–Maailma ja Euroopa väärtuste uuringute–ühendandmestikku ning riikide statistilisi andmeid näiteks Maailma tervishoiu organisatsiooni suremuse andmebaasist. Lisaks täiskasvanute andmetele on indeksi toimimist katsetatud ka lastelt kogutud rahvusvahelisel harmoneeritud andmestikul.

Indeksi konstrueerimisel kõik üksikud näitajad normaliseeriti standardiseerimise teel ning vastavad väärtused liideti kasutades võrdse kaalumise põhimõtet. **Uurimuses I** testiti normaliseerimiseks ka järjestuse (*ranking*) meetodit ja agregeerimiseks mitte-kompenseerivat geomeetrilist meetodit, kuid olulisi erisusi riikide järjestuses võrrelduna valitud meetoditega ei ilmnunud. SIID-i väärtused on arvatud umbes viie aastaste, näiteks **uurimuses III** 1989–1993, 1994–1998, 1999–2004, 2005–2009 and 2010–2014 perioodide kohta.

Indeksi valideerimine kinnitas selle metodoloogilist toimimist järgnevalt:

- SIID on sisemiselt terviklik sotsiaalne indikaator (**uurimus I ja II**); Näiteks selgus **uurimusest I**, et Cronbach-i alfa, täieliku (*total*) ja hierarhilise omega väärtused varieerusid SIID-i puhul 0,783–0,881 olenevalt ajaperioodist. Spearman-i korrelatsiooni koefitsiendi alusel olid SIID-i erinevad näitajad ajavahemikus 1994–2007 omavahel kõige sagedamini mõõdukas (0,4–0,6) seoses, ajavahemikes 1989–1993 ja 2008–2010 nõrgas (0,2–0,4) seoses. Ühiskondades, kus isikutevahelise destruktiivsuse tase oli kõrge/madal, oli ka tagajärgede tase kõrge/madal, v.a. mõned Vahemere idapoolsed ja Musta mere ääres paiknevad ühiskonnad, mis on varasemalt kuulunud Ottomani impeeriumi koosseisu.
- SIID kontseptuaalne skeem on rakendatav laste populatsioonile (**uurimus II**); Näiteks selgus **uurimusest II**, et Spearman-i korrelatsiooni koefitsiendi alusel olid isikutevahelise destruktiivsuse eelduste dimensioonid omavahel ning vaimse heaolu kui isikutevahelise destruktiivsuse tagajärgena nõrgas (minimaalselt 0,255) kuni mõõdukas (maksimaalselt 0,487) seoses, välja arvatud majandusliku ebakindluse näitajad. Mitmetasandilisest regressioonanalüüsist selgus, et kõik isikutevahelise destruktiivsuse eelduste dimensioonid mõjutasid laste enesekohast vaimse heaolu hinnangut negatiivselt. Riigipõhistest regressioonanalüüsist ilmselt, et need seosed olid universaalsed kõikides ühiskondades, ehkki põhilise erandina võib välja tuua majandusliku ebakindluse dimensiooni.
- SIID-i saab kasutada ühiskonna destruktiivsuse hindamise ajalisteks ja ruumilisteks võrdlusteks (**uurimus III**; Nahkur 2014); Muuhulgas ilmselt **uurimusest III**, et ajavahemikus 1999–2004 oli isikutevahelise destruktiivsuse tase valitud 26 ühiskonna seast kõrgeim Venemaal, Ukrainas, Kolumbias, Moldovas, Lõuna-Aafrikas ja Filipiinidel ning madalaim Rootsis, Norras, Hispaanias ja Austraalias. Nahkur (2014) leidis isikutevahelise destruktiivsuse eelduste (SIID-P x-teljel) ja tagajärgede (SIID-C y-teljel) taset graafil kõrvutades, et sarnase kultuurilise ja/või usulise ja/või ajaloolise taustaga ühiskonnad paiknevad üksteise lähedal. Seejuures oli võimalik eristada Euroopa protestantlikke ja katoliiklikke, inglisekeelseid, Ladina-Ameerika, konfutsionistlikke, Lõuna-Aasia, Aafrika ning post-kommunistlikke regioone. Samuti leidis Nahkur (2014), et ühiskonna isikutevahelise destruktiivsuse tase on oodatud suunas seotud ühiskonnas levinud naistevastase lähisuhtevägivalla hoiakutega (Spearman-i korrelatsiooni koefitsient 0,448–0,633 olenevalt ajaperioodist), vanematepoolse lastevastase vägivalla hoiakutega (0,444–0,694), kooli-

kiusamise ohvriks (0,390–0,678) ja koolikiusajaks (0,516–0,657) olemise sagedusega viimasel kuul. **Uurimus III** kinnitas Pinker-i (2011) hiljutise vägivalda vähenemise teesi–peaaegu kõigis 26-s valitud ühiskonnas isikutevahelise destruktiivsuse tase ajavahemikus 1991–2012 langes. Kasutades mudelit eksponentsiaalse lähenemisega piirmäärale, langes maailma keskmine SIID väärtus järgnevalt $SIID = 13.3(e^{-0.0132(t-2001.5)} - 1)$. Langus oli kiireim katoliiklikes Ida-Euroopa ühiskondades (Ungari, Poola, Sloveenia).

- Rahvusvaheliselt harmoniseeritud ja regulaarselt kogutavate andmete kättesaadavuse paranedes saab SIID-i edasi arendada ja kohandada uutele elanikkonna rühmadele.

SIID-i väärtust poliitika kujundate silmis võib vähendada see, et sellega ei saa mõõta konkreetsete vägivaldaennetuse programmide mõju lühiajalises plaanis, sh see et uut indeksi väärtust on võimalik arvutada umbes iga viie aasta tagant. Samuti kehtib indeksi väärtus umbes viie aastase perioodi kohta. Regulaarse sotsiaalse monitoorimise ja aruandluse kaudu omab SIID potentsiaali informeerida üldsust, äratada avalikku huvi, initsieerida arutelusid, rahuldada meedia isu statistikapõhiste narratiivide järele, olla lobivahendiks huvirühmadele. Lisaks rakendusele teadusuuringutes, omab SIID ka potentsiaali olla uus sotsiaalne indikaator, mida statistikud kaasavad oma indikaatorsüsteemidesse ja rahvusvahelised organisatsioonid nagu WHO kasutavad vägivaldaennetuse algatustes.

PUBLICATIONS

CURRICULUM VITAE

Name: Oliver Nahkur
Date of birth: September 13, 1987
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Tartu
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Education

2014–2019 University of Tartu, PhD studies in sociology
2011–2014 University of Tartu, Master studies in sociology (*cum laude*)
2007–2011 University of Tartu, Bachelor studies in social work, social policy and comparative politics

Work Experience

Since 2015 Junior research fellow, Institute of Social Studies, University of Tartu
2014–2015 Analyst, Institute of Public Health, University of Tartu
2012–2014 Analyst, EuroCollege, University of Tartu

Research Interests

Interpersonal destructiveness, including conflicts and violence in societies; communication culture; conflict prevention; construction of composite indicators/indexes; measuring interpersonal conflicts and destructiveness; cultures and conflict; health and healthcare, including public attitudes toward healthcare and satisfaction with healthcare system

Participation in Relevant Research and Development Projects

Since 2019 Project “Children’s subjective well-being in comparative perspective: methodological challenges and practical contributions” – writing academic papers
2015–2018 Project “The Paradox of Health Care Futures (ERA-NET NORFACE)” – writing academic papers
2015–2016 Project “Attitudes of Estonian Population towards New Migrants from the Third-Countries” – data analyses, co-author of the research report
2014 Project “Internal security in LG’s development documents and parliamentary parties election platform’s” – data analyses, co-author of the research report
2013–2015 Project “Rehabilitation program for men who are convicted for domestic violence” – co-development of the rehabilitation program, including writing the overview of world practices in the field and program guide

Most Significant Publications

- Nahkur, Oliver; Taagepera, Rein. (2019). Was Pinker on the Right Track? The Speed of Recent Decline of Violence and Gender Inequality, *Comparative Sociology*, 18(2), 148–172.
- Nahkur, Oliver; Kutsar, Dagmar (2019). Social ecological measures of interpersonal destructiveness impacting child subjective mental well-being: perceptions of 12-year-old children in 14 countries. *Child Indicators Research*, 12 (1), 353–378.
- Roots, A.; Ainsaar, M.; Nahkur, O. (2019). Economic inequality in satisfaction with health care in the Baltic countries during and after the economic crisis. *Journal of Baltic Studies*, 50 (1), 21–37.
- Nahkur, Oliver; Kutsar, Dagmar; Murakas, Rein. (2017). A Two-Dimensional Two-Layered Societal Index of Interpersonal Destructiveness: Internal Consistency Analysis. *Social Indicators Research*, 133 (2), 431–454.
- Võrno, Triin; Lutsar, Katrin; Uusküla, Anneli; Padrik, Lee; Raud, Terje; Reile, Rainer; Nahkur, Oliver; Kiivet, Raul-Allan (2017). Cost-effectiveness of HPV vaccination in the context of high cervical cancer incidence and low screening coverage. *Vaccine*, 35 (46), 6329–6335.

International Academic Conference Presentations

- 2019 Oral presentation “Lead and Lag Times of Countries in a Gentler World” at Mid-term Conference of the ISA-RC55 Research Committee on Social Indicators “Comparative Perspectives on Social Indicators” in the context of 13th Spanish Congress of Sociology (3.–6.07.2019 Valencia)
- 2018 Oral presentation “Societal Index of Interpersonal Destructiveness: Attempting to Provide More Candid and Regular Reporting about Countries’ Interpersonal Violence Level on Global Perspective” at International Sociological Association (ISA) conference XIX World Congress of Sociology „Power, Violence and Justice: Reflections, Responses and Responsibilities“ (15.–21.07.2018 Toronto, Canada), ISA research committee 55 (social indicators) session
- 2018 Oral presentation “Rapid Social Change and Long Term Trends in Societies’ and Regions’ Level of Interpersonal Destructiveness” at International Sociological Association (ISA) conference XIX World Congress of Sociology „Power, Violence and Justice: Reflections, Responses and Responsibilities“ (15.–21.07.2018 Toronto, Canada), ISA research committee 55 (social indicators) session
- 2018 Oral presentation “Was Pinker right? Testing 7 cultural regions’ interpersonal violence decline and values change since 1990s” at 16th Annual International Society for Quality-of-life Studies (ISQOLS) conference “Promotion of Quality of Life in the Changing World” (14–16.06.2018 Hong Kong)
- 2017 Oral presentation “Genders in focus: Depression and its multilevel correlates based on pooled data from 18 European countries” at 15th Annual International Society for Quality-of-life Studies (ISQOLS) conference

- „Quality-of-life: Towards a Better Society“ (28.-30.09.2017 Innsbruck, Austria)
- 2017 Oral presentation “The effect of subjective and objective economic insecurity to child self-assessed mental well-being based on ISCIWeb 12-year-old data from 14 countries” at 6th International Society of Child Indicators (ISCI) conference “Children in a World of Opportunities: Innovations in Research, Policy and Practice” (28.06–30.06.2017 Montreal, Canada)
- 2016 Oral presentation “International Comparative Usability of the Societal Index of Interpersonal Destructiveness: a Validity Analysis” at International Sociological Association (ISA) conference “Third ISA Forum of Sociology”, research committee 55 (social indicators) session “Wellbeing Research and Indicators in Global and Comparative Perspective” (Vienna, Austria)

Received Scholarships and Benefits

- 2015 Tartu University Hospital’s prize for the best academic article in 2015 in the journal *Eesti Arst* (Estonian Physician)
- 2014 Ministry of Justice (Estonia) students’ research prize
- 2012/2013 Professor, Dr Anne Jennings Smith’i ja Gerhard Treuberg stipend
- 2011 The Estonian national student research competition 1st prize in social sciences and culture at applied higher education or a bachelor’s degree level
- 2011 Estonian Academy of Sciences students’ research prize

Membership in Professional Organisations

- Since 2019 Estonian Association of Sociologists – member of the board
- Since 2017 International Sociological Association, research committee 55 (social indicators) – member
- Since 2017 International Society for Child Indicators (ISCI) – member
- Since 2017 International Society for Quality-of-Life Studies (ISQOLS) – member
- Since 2011 Estonian Association of Sociologists – member

ELULOOKIRJELDUS

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Haridus:
2014-2019 Tartu Ülikool, doktoriõpe sotsioloogia erialal
2011-2014 Tartu Ülikool, magistri kraad sotsioloogia erialal (*cum laude*)
2007-2011 Tartu Ülikool, bakalaureuse kraad sotsiaaltöö, sotsiaal- ja võrdleva poliitika erialadel

Töö:
Alates 2015 Nooremteadur, Tartu Ülikooli ühiskonnateaduste instituut
2014–2015 Analüütik, Tartu Ülikooli tervishoiu instituut
2012–2014 Analüütik, Tartu Ülikooli Euroopa Kolledž

Peamised uurimisvaldkonnad

Isikutevaheline destruktiivsus, sh konfliktus ja vägivald ühiskondades; suhtlemiskultuur; konfliktiennetus; liitmõõdikute, sh indeksite konstrueerimine; isikutevahelise konfliktuse ja destruktiivsuse mõõtmine; kultuurid ja konflikt; tervis ja tervishoid, sh elanike tervishoiualased hoiakud ja rahulolu tervishoiusüsteemiga

Osalemine olulisemates uurimis- ja arendusprojektides

Alates 2019 Projekt “Laste subjektiivne heaolu võrdlevas perspektiivis: metodoloogilised väljakutsed ja panus praktikasse” – teadusartiklite koostamine
2015–2018 Projekt “Tervishoiu tulevikuparadoks (ERA-NET NORFACE)” – teadusartiklite koostamine
2015–2016 Projekt “Eesti elanikkonna hoiakud kolmandatest riikidest uussisserändajate suhtes Euroopa Sotsiaaluuringu andmetes” – andmeanalüüs, uuringu raporti kaasautor
2014 Projekt “Siseturvalisus KOV-ide arengudokumentides ja parlamendi erakondade valimisplatvormides” – siseturvalisuse valdkonna kaardistamine KOV-ide valimisplatvormides, ülevaate koostamine
2013–2015 Projekt “Rehabilitatsiooniprogramm pere- või paarisuhtevägivallas süüdimõistetud meestele” – rehabilitatsiooniprogrammi väljatöötamises osalemine, sh programmi juhendi ja maailmapraktikate ülevaate koostamine

Olulisemad publikatsioonid

- Nahkur, Oliver; Taagepera, Rein. (2019). Was Pinker on the Right Track? The Speed of Recent Decline of Violence and Gender Inequality, *Comparative Sociology*, 18(2), 148–172.
- Nahkur, Oliver; Kutsar, Dagmar (2019). Social ecological measures of interpersonal destructiveness impacting child subjective mental well-being: perceptions of 12-year-old children in 14 countries. *Child Indicators Research*, 12 (1), 353–378.
- Roots, A.; Ainsaar, M.; Nahkur, O. (2019). Economic inequality in satisfaction with health care in the Baltic countries during and after the economic crisis. *Journal of Baltic Studies*, 50 (1), 21–37.
- Nahkur, Oliver; Kutsar, Dagmar; Murakas, Rein. (2017). A Two-Dimensional Two-Layered Societal Index of Interpersonal Destructiveness: Internal Consistency Analysis. *Social Indicators Research*, 133 (2), 431–454.
- Võrno, Triin; Lutsar, Katrin; Uusküla, Anneli; Padrik, Lee; Raud, Terje; Reile, Rainer; Nahkur, Oliver; Kiivet, Raul-Allan (2017). Cost-effectiveness of HPV vaccination in the context of high cervical cancer incidence and low screening coverage. *Vaccine*, 35 (46), 6329–6335.

Rahvusvahelised konverentsiettekanded

- 2019 Suuline ettekanne “Lead and Lag Times of Countries in a Gentler World” 13nda Hispaania sotsioloogia kongressi raames toimuv ISA (International Sociological Association) uurimiskomitee nr 55 ‘Sotsiaalsed indikaatorid’ konverentsil “Comparative Perspectives on Social Indicators” (3.–6.07.2019 Valencia)
- 2018 Suuline ettekanne “Societal Index of Interpersonal Destructiveness: Attempting to Provide More Candid and Regular Reporting about Countries’ Interpersonal Violence Level on Global Perspective” Rahvusvahelise Sotsioloogia Assotsiatsiooni (ISA) konverentsil XIX World Congress of Sociology “Power, Violence and Justice: Reflections, Responses and Responsibilities” (15.–21.07.2018 Torontos, Kanadas), ISA uurimiskomitee nr 55 (sotsiaalsed indikaatorid) sessioonis
- 2018 Suuline ettekanne “Rapid Social Change and Long Term Trends in Societies’ and Regions’ Level of Interpersonal Destructiveness” Rahvusvahelise Sotsioloogia Assotsiatsiooni (ISA) konverentsil XIX World Congress of Sociology “Power, Violence and Justice: Reflections, Responses and Responsibilities” (15.–21.07.2018 Torontos, Kanadas), ISA uurimiskomitee nr 55 (sotsiaalsed indikaatorid) sessioonis
- 2018 Suuline ettekanne “Was Pinker right? Testing 7 cultural regions’ interpersonal violence decline and values change since 1990s” 16ndal ISQOLS aastakonverentsil “Promotion of Quality of Life in the Changing World” (14–16.06.2018 Hong Kong)
- 2017 Suuline ettekanne “Genders in focus: Depression and its multilevel correlates based on pooled data from 18 European countries” 15ndal International Society for Quality-of-life Studies (ISQOLS) aastakonverentsil

- “Quality-of-life: Towards a Better Society” Innsbruckis, Austrias (28.-30.09.2017)
- 2017 Suuline ettekanne “The effect of subjective and objective economic insecurity to child self-assessed mental well-being based on ISCIWeb 12-year-old data from 14 countries” 6ndal International Society of Child Indicators konverentsil “Children in a World of Opportunities: Innovations in Research, Policy and Practice” Montrealis, Kanadas (28.06–30.06.2017)
- 2016 Suuline ettekanne “International Comparative Usability of the Societal Index of Interpersonal Destructiveness: a Validity Analysis” Rahvusvahelise Sotsioloogia Assotsiatsiooni (ISA) konverentsil “Third ISA Forum of Sociology” uurimiskomitee nr 55 (Sotsiaalsed indikaatorid) sessioonil “Wellbeing Research and Indicators in Global and Comparative Perspective” Viinis, Austrias.

Saadud stipendiumid ja tunnustused

- 2015 Tartu ülikooli kliinikumi preemia 2015. aasta parimale teadusartiklile ajakirjas Eesti Arst
- 2014 Justiitsministeeriumi üliõpilastööde konkursi preemia
- 2012/2013 Professor, Dr Anne Jennings Smith'i ja Gerhard Treubergi nimeline mälestusstipendium
- 2011 Üliõpilaste teadustööde riikliku konkursi I preemia ühiskonnateaduste ja kultuuri valdkonnas rakenduskõrgharidusõppe ja bakalaureuseõppe astmes
- 2011 Eesti Teaduste Akadeemia üliõpilastööde konkursi preemia

Erialased organisatsioonid

- Alates 2019 Eesti Sotsioloogide Liidu juhatuse liige
- Alates 2017 Rahvusvahelise Sotsioloogia Assotsiatsiooni sotsiaalsete indikaatorite uurimiskomitee (RC55) liige
- Alates 2017 Rahvusvahelise laste indikaatorite ühingu (ISCI) liige
- Alates 2017 Rahvusvahelise elukvaliteedi uuringute ühingu (ISQOLS) liige
- Alates 2011 Eesti Sotsioloogide Liidu liige

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18. **Kairi Talves.** The dynamics of gender representations in the context of Estonian social transformations. Tartu, 2018, 129 p.
19. **Aare Kasemets.** Institutionalisation of Knowledge-Based Policy Design and Better Regulation Principles in Estonian Draft Legislation. Tartu, 2018, 252 p.

20. **Dagmar Narusson.** Personal-recovery and agency-enhancing client work in the field of mental health and social rehabilitation: Perspectives of persons with lived experience and specialists. Tartu, 2019, 139 p.