Diversity Icebreaker®

DOCUMENTATION FOR DNV GL RECERTIFICATION, AUTUMN 2016

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Contents

1. Introduction

This document is to accompany Diversity Icebreaker (DI) user materials, unpublished research reports and published articles submitted for the recertification of the instrument.

Since the certification of the Diversity Icebreaker in 2013, we continued our efforts to expand the documentation of the instruments validity and reliability, improve user materials as well as explore new areas of application and scientific research relevant for DI.

The documentation you have before you gives an overview of these efforts during the past three years. In many cases, we continued exploration of the areas we had already received positive feedback on from the evaluators. We have, however, also conducted an important criterion validity study of the instrument – a point accurately noted by the evaluators as an area of improvement.

Organization of this report

All research efforts and studies taken since the instrument's certification in 2013 are listed in this report. Wherever a study is completed and/or published, a short description is followed by a reference to the article, research report or other materials in the Appendices-folder. If a study is not finished, but preliminary results are available, they are presented here. In addition, planned and on-going studies are briefly described, with explanation of their possible significance for the instrument's validity, reliability and/or application.

First, description of new databases gathered since 2013 that contribute or will in the future contribute to DI norms for new populations are presented.

Second, reliability studies complementing the original internal consistency studies are presented.

Third, this is followed by presentation of the conducted, on-going and planned research projects relevant for various areas of the Diversity Icebreaker's validity.

Fourth, a new, digital version of the instrument is presented. NB: This version is presented here for orientation only and is not subject of this certification (as it is essentially a different version of the DI questionnaire). It is already being used in particular settings and it is being used to gather data for norm-building and further refinement of this version's application and psychometric properties.

Fifth, new user- and facilitator-materials, which have be developed since certification, are presented.

At the end, a brief description of a new, alternative name and trademark used in parallel with Diversity Icebreaker – Trialogue® – is presented. This brand is used only with some client groups.

2. New datasets (for present and future norms)

Norm data material has been gathered from the Norwegian population so far as to certify the instrument within the NFP framework for the intended use[1]. Nonetheless, we continue to gather data in two cases: if the instrument is used in a new form (e.g. the mobile version with 7-point Likert scale; see section "Mobile Diversity Icebreaker" below) and when a specific, narrow group can be accessed in big enough numbers. Below, we present datasets gathered in such cases.

Regular version data (semi-ipsative, paper questionnaire)
University in Oslo, the Faculty of Mathematics and Natural Sciences, N=1235, 2014-5

Data gathered in the UiO during the fall semesters of 2014 and 2015 from the preparatory courses for freshman (where the Diversity Icebreaker workshop is a part of the program). The sample consisted of N=1235 first year students of the Faculty of Mathematics ("MatNat") and Natural Sciences of the University in Oslo, M_{age}=22.59, 42.7% were women.

Table 1. *Means and standard deviations, UiO "MatNat", N=1235*

DI categories	*M* and *SD*
Blue	*M*=32.96, *SD*=7.85
Red	*M*=25.92, *SD*=8.55
Green	*M*=25.09, *SD*=6.76

Furthermore, means for various "lines" or specializations of students in the Faculty of Mathematics and Natural Sciences – subgroups in the dataset – are presented below:

Table 2. *Means, UiO "MatNat", subgroups.*

	M_{Blue}	M_{Red}	M_{Green}
UiO (N=1235)	32,96	25,92	25,09
Norm (N=8859)	30,61	28,00	24,62
INOR (N=84)	34,29	23,06	26,40
ISK (N=65)	30,15	27,29	26,71
LEKTOR (N=61)	31,13	31,43	21,39
FARMASI (N=142)	31,88	28,71	23,26
MBK (N=74)	31,72	28,00	24,34
KJEMI (N=36)	34,00	25,94	24,03
BIO (N=70)	33,11	27,53	23,29
MAEC (N=53)	32,75	27,51	23,79
FAM (N=169)	33,41	23,09	27,40
GEO (N=64)	35,08	26,23	22,67
DESIGN (N=59)	29,27	28,37	26,36
MENA (N=96)	33,50	23,35	26,99
MIT (N=111)	34,70	24,71	24,66
ELDAT (N=53)	35,13	24,58	24,40
PROG (N=98)	32,51	25,89	25,55

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[1] i.e. application in workshops and to give some indication of what high and low means, and "are not used as cut-off scores for any forms of selection, nor are they used to assign individuals to certain types"; see more in *Sluttrapport – Sertifiseringsdokument Diversity Icebreaker 12.11.2013* and *Documentation for description of the Diversity Icebreaker*.

Psychology students, NTNU, N=400, 2016 – planned

The questionnaires have been used with students at NTNU in September 2016 and secured for data-gathering purposes; we will receive them shortly and create a dataset.

Leader teams, N=170 (17 teams)

For many reasons, seeing whether and how the leaders and leader teams differ on the mean Red, Blue and Green scores from the norm and/or co-workers, is interesting. Below are the data from 17 leader-teams gathered until early 2016, N=170, comprising 21 separate leader-teams. The mean age is somewhat higher than what we usually see in team data (M_{age}=50.41); there were also fewer women in the sample (38%).

Table 3. *Means and standard deviations, leader teams, N= (17 teams)*

DI categories	*M* and *SD*
Blue	*M*=30.95, *SD*=7.24
Red	*M*=27.41, *SD*=5.76
Green	*M*=25.63, *SD*=5.16

Here, the means for the leader teams sample are very close to the normal population (DI general norms), with the SD for blue somewhat higher. It may suggest that neither colour was overrepresented among the leaders in this sample.

Innovation department of a research oriented Norwegian organisation (N=91) and

Data were gathered following a Diversity Icebreaker workshop held for a research oriented Norwegian company, with many participants holding a PhD degree, M_{age}=49.37, 55.26% were women.

Table 4. *Means and standard deviations, Innovation department, N=98*

DI categories	*M* and *SD*
Blue	*M*=33.26, *SD*=8.11
Red	*M*=23.97, *SD*=6.29
Green	*M*=26.50, *SD*=7.35

Mobile version data (7-point Likert scale)

The relatively small datasets in this section are only a beginning of, what we hope, will continue to grow into a very substantial set of data gathered using the digital mobile version of the Diversity Icebreaker (described in detail below, in section 5). Harnessing data in this way has many benefits: it is efficient and we can ask many additional questions, e.g. about the respondent's profession (due to the small size of the present datasets, the potential subgroups are not described; see section 5 below for the complete list of additional questions).

The means and standard deviations presented in Tables 5 to 10 are based in transformed scores (the data in this version of the questionnaire are gathered using a 7-point Likert scale format but are then

transformed to resemble the scores one otherwise obtains using the paper version – the procedure is described in detail in section 5, below).

Norwegian workshop participants, N=52
Data gathered in workshops with selected clients, where the DI in digital version was used.

Table 5. *Means and standard deviations, transformed scores.*

DI categories	*M* and *SD*
Blue	*M*=24.21, *SD*=10.61
Red	*M*=28.08, *SD*=8.87
Green	*M*=32.40, *SD*=11.82

Norwegian high school students, N=52
Data gathered in two workshops with high school students in Larvik, Norway.

Table 6. *Means and standard deviations, transformed scores.*

DI categories	*M* and *SD*
Blue	*M*=26.63, *SD*=7,35
Red	*M*=28.22, *SD*=8.69
Green	*M*=29.38, *SD*=7.11

Student advisors (*Studentveildere*) from various universities in Norway, N=75
Data have been gathered following a conference for student advisors from Norway following a lecture on the Diversity Icebreaker held by Bjørn Z. Ekelund and Piotr Pluta.

Table 7. *Means and standard deviations, transformed scores.*

DI categories	*M* and *SD*
Blue	*M*=31.09, *SD*=10.98
Red	*M*=28.49 *SD*=9.49
Green	*M*=24.61, *SD*=7.16

University student leaders, Norway (Bergen), N=73 / N=237
The first batch of data comes from a workshop held with leaders of student organisations in Bergen (N=73, M_{age}=23.87, 57.53% were women) – in case of this data we are sure that they come from this "kind" of population. These workshop participants were then invited to share the link to the Diversity Icebreaker online questionnaire with their colleagues and fellow students. The larger dataset of

N=237, M_{age}=24.14, 60.71% women, consists of aggregated data from these workshop participants and data that came in during the week following the workshop.

Table 8. *Means and standard deviations, transformed scores – workshop participants dataset N=73.*

DI categories	*M* and *SD*
Blue	*M*=28.85, *SD*=7.14
Red	*M*=29.52, *SD*=7.34
Green	*M*=25.77, *SD*=7.01

Table 10. *Means and standard deviations, transformed scores, aggregated dataset N=237.*

DI categories	*M* and *SD*
Blue	*M*=28.07, *SD*=7.56
Red	*M*=29.08, *SD*=7.93
Green	*M*=27.07, *SD*=7.69

Comments

Although the first sample – workshop participants – can be considered a sample similar to the subsamples included in the general Diversity Icebreaker norms (see p. 13 of *Documentation for description and evaluation of the Diversity Icebreaker*), the Ms and SDs for Red, Blue and Green obtained in this sample differ to considerable extent from the norms. There could be three reasons for this:

1) The small size of this sample, N=52, makes it non-representative for the general population and thus such differences in Ms and SDs from norm data are fully possible. It is conceivable that this groups was *so high* on Green and *so low* on Blue.

2) The purpose of the formula applied to transform raw scores harnessed with 7-point Likert scale in the mobile version is to recreate closest possible scores that the same person would have obtained if he or she scored a regular version of the questionnaire, i.e. with the sum of three scores equal (or close) to 84 and with respect to the Ms and SD in the general DI norms. However, this formula may not be yet perfect (section 5 explains why) and thus the transformation gives a distorted picture.

3) The differences in the way participants answer the items (7-point Likert scale vs. semi-ipsative scale and independent item answering vs. distributing 6 points among 3 items in a row) may influence how the respondents answer the questions, which can have consequences on the mean results in the population.

On the other hand, the student-advisors sample (N=75), which is somewhat larger and to some extent may also be considered similar to the subsamples in the Norwegian norm, yielded means very close to norms.

Thus, more data harnessed using the online version of DI are needed from groups similar to the subgroups included in the Norwegian sample (1) in order to either improve the mathematical formula (2) or see whether a new norms are necessary due to differences in the way respondents answer the DI questions in Likert-format, which the formula cannot take care of (3).

3. Internal consistency

The internal consistency of the DI categories of Red, Blue and Green has been thoroughly documented (Ekelund, Pluta, & Ekelund, 2013), what has been observed by the evaluators in their feedback to the certification in 2013:

> Test-retest reliability and internal consistency is well documented for all three colours.

> (Iversen & Nilsen, 2013)

Nevertheless, we continue to analyse the internal consistency of the instrument whenever we acquire data gathered in new contexts.

Such is the case with the data sets so far acquired using a digital version of the instrument, employing 7-point Likert scale and scored on mobile devices (see sections 3 above, for descriptions of the samples, and section 5 below, for the description of this instrument's version).

Four data sets were so far analysed for their internal consistency with Cronbach's alpha, both using the Norwegian version of the questionnaire:

a) workshop participants, N=52; the results obtained were:
   - Red – α=.877
   - Blue – α=.853
   - Green – α=.829

b) high school students, N=52; the results obtained were:
   - Red – α=.671
   - Blue – α=.740
   - Green – α=.757

c) student advisors, N=75; the results obtained were:
   - Red – α=.883
   - Blue – α=.838
   - Green – α=.768

d) student leaders & their friends, N=273
   - Red – α=.830
   - Blue – α=.744
   - Green – α=.756

Alpha is satisfactory inn all case but one: Red in the sample of 52 high school students. We interpret the overall result as evidence for the instrument's robustness in general, and specifically for its mobile form. Especially the high alphas yielded by the data gathered from the workshop participants, the context of the Diversity Icebreaker most typical application. The lower alphas (with one slightly below the >.7 rule of thumb) in the high school students sample can be attributed to it not being the most typical context of the tool's applicant, lower quality of data and less control when the data were being harnessed. The two other samples c) and d) yielded high reliability rates.

Will continue analysing the tool's dimensions internal consistency.

4. Validity: New, on-going and planned studies

Below is an overview of various conducted and on-going studies, as well as planned research activities, that provide or may provide insights into the Diversity Icebreaker's validity.

4.1 Choice of study specialization and Red, Blue and Green – significance: criterion (predictive) validity

Research conducted by Piotr Pluta, Human factors AS, 2016

(If you're interested in reading the entire research report, please contact piotr@human-factors.no.)

In the final feedback we received from the evaluators in 2013 following the certification of the Diversity Icebreaker, one point of improvement was emphasized. It was related to instrument's criterion validity:

> *Criterion related validity is documented through two studies. However, the correlations for the green category are low. More research is necessary in this area.*

and

> *The psychometric properties of the instrument seem to be well documented. However, further research regarding criterion related validity of the instrument would be beneficial.*

> (Iversen & Nilsen, 2013)

According to NFP framework "(…) Concurrent and predictive validity [which are examples of criterion validity] refer to studies where real-world criterion measures (i.e. not other instrument scores) have been correlated with scales. Predictive studies generally refer to situations where assessment was carried out at a `qualitatively' different point in time to the criterion measurement - e.g. for a work-related selection measure intended to predict job success, the instrument would have been carried out at the time of selection - rather than just being a matter of how long the time interval was between instrument and criterion measurement"

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One can assume that being able to test an individual with a psychological measure and based on his/her result predict whether this individual will make certain life-choices, would constitute evidence supporting this psychological measure's criterion (predictive) validity. We have conducted two studies exploring this possibility on data gathered with the Diversity Icebreaker questionnaire from two cohorts of first-year students from the Faculty of Mathematics and Natural Sciences (MatNat) at the University of Oslo (UiO):

First, we created a set of hypotheses (on whether a given study line will attract students with an above average, average, or below average preference for Red, Blue or Green as compared with norm). These hypotheses were based on descriptions of the study lines (fifteen different specializations within MatNat) available from the UiO website and were then tested in the data from 2014.

Second, we made predictions based on the significant differences between the study lines and the norm observed in data from 2014 and tested them on the data from the following year, 2015.

The attached research report ("Diversity Icebreaker predictive validity study - choice of study specialization (Piotr Pluta 2016)_16.09.2016") describes this rationale, methodology, results and their interpretation in detail. The reports concludes that, indeed, these two studies provide compelling evidence supporting Diversity Icebreaker's validity. It also describes possible practical implications of the knowledge acquired in the study as well invites for further research in this area.

4.2 Diversity Icebreaker at Ecole de Commerce Post bac à Lille et Paris (IÉSEG) – significance: construct and criterion validity
Ongoing research with multiple researchers involved from IÉSEG and Human Factors AS, 2015-2016

Read more about the use of the tool in academic context and download a white paper here: http://diversityicebreaker.com/academia

The Diversity Icebreaker is used by IÉSEG every year for approx. 1000 first year students in business and English. Diversity Icebreaker is used as one of the modules in a credit-based course in developing cross-cultural competence, ending up with a multiple-parts exam. IÉSEG is gathering all the data (in addition to the DI scores, also Cultural Intelligence Questionnaire, student reflection-journals and grades from the course) and they will be analysed later this year with purpose of publication. We hope that the results will shed more light on the Diversity Icebreaker's construct validity (Red, Blue and Green in relation to cross-cultural competencies) and predictive validity (e.g. relation between Red, Blue and green and students' final grades).

A broader description of the Diversity Icebreaker's application at IÉSEG is available in "Diversity Icebreaker in academic institutions (with preface) ver13_03.08.2016" white paper, attached.)

4.3 Research at the Hebrew University Business School, 2012-2016 – significance: consequential and construct validity
Ongoing part of the research commenced in 2012 and partially described in 2013 DNV GL certification documents, Arion Sharieli PhD – lead researcher

The Hebrew University continues to apply the Diversity Icebreaker with students and uses it in ambitious research. New experiments explore the relation between the three colours and the workshop effects in relation to variables such as problem solving, voice and perspective taking. As stated in the excerpt below, taken from the final remarks in a research report provided for us by Sharon Arieli (attached, "Hebrew University – Diversity Icebreaker projects – Summary of the results – September 2016[2]"):

> *We are now engaged in three research projects in which we study the impact of the workshop in in real-life organizational settings, focusing on important organizational outcomes, such as problem solving, voice, and perspective taking. The projects include samples from three different types of organizations: high-tech company that focuses on technological development, a non-profit organization that focuses on integrating students from minority groups in the society, and the administrative staff at a public university in Israel. Findings from a pilot study in which we tested the research materials among students (n=97, 7 groups) has shown that the workshop amplified novelty in problem solving, and facilitated voice and idea generation, as such the quality of the ideas generated was higher after the workshop.*

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[2] Note that the attached research report describes in majority the results already presented in detail in the 2013 certification documentation.

4.4 Humour in the Diversity Icebreaker workshops – significance: construct and consequential validity

Theoretical paper presented by Piotr Pluta at the 23rd Nordic Academy of Management in Copenhagen, 2015

(If you're interested in reading the entire paper, please contact piotr@human-factors.no.)

Participants and facilitators using the Diversity Icebreaker alike have always regarded humour as one of the most important elements of the workshop and qualities of the tool. Human Factors AS has also advertised the Diversity Icebreaker as a tool that elicits humour, with a lot of energy and positive emotions[3]. Thus, a systematic and scientific approach to the phenomena of humour in the DI model and workshops was largely in demand.

Piotr Pluta, who is also the author of a popular science blog on psychology of humour (www.psychologyofhumor.com) and other publication on the topic, wrote the paper in attempt to lay the theoretical foundations for investigating humour in the Diversity Icebreaker, i.e. asking the right research questions, using relevant methodology and relating it to existing research and theory.

Following the introduction, the paper defines humour as a psychological and sociological phenomenon (which serves as the theoretical, construct definition of humour in the paper). Then, after a short description of the Diversity Icebreaker tool and workshop, reasons for studying humour in DI are provided and a provisional classification of humour instances in the workshops follow (based on a qualitative observation of different humour instances in the workshop). This classification can serve as an operational definition of humour for future studies.

Then, the relevant cognitive psychology theories and research, which are related to various instances of humour in the DI, are presented. This part concludes with the possible effects of humour on the workshop – seen from the cognitive perspective – and research questions worthwhile investigating within this paradigm.

Next are a number of social psychology humour theories and research, grouped under following headlines: "Closeness and liking", "Interpersonal attraction", "Cohesion and identity building", "Self-exposure and social probing", "Reduction of tension" and "Creativity". Each of the sections here makes links between the available theory and research with instances of humour in the Diversity Icebreaker workshops and presents research questions.

At the end of the paper, a complete summary of the research questions is presented.

See the attached paper: "Systematic use of humour in HR training concepts – on example of the Diversity Icebreaker Piotr Pluta_21.10.2015"

It should be noted here that we have already begun to test one of the principal assumptions discussed in the paper. A short scale assessing humour in DI is being used during workshops with students at the University in Oulu, Finland (the scale is attached, "Humor in DI workshop - short scale, Feb 2016 (P. Pluta).doc"). Apart from the questions about the intensity of the overall humour experience (funniness) and about which of the workshop parts is most abundant in humour, it also asks the following question "How much fun do you think the other participants had? *Much less fun than I did – 1, Much more fun than I did – 7*" This item is aimed to explore one of the research

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[3] Evidence for an increase in positive affect has been provided by the research at the Hebrew University and reported in the 2013 certification documentation but no explicit research questions have been asked.

questions presented at the end of the paper discussed here, i.e. "Do all the participants equally contribute in and benefit from humour in the Diversity Icebreaker?"

4.5 Diversity Icebreaker used in African countries – significance: consequential validity
Paper written by multiple authors and presented by Bjørn Z. Ekelund, Human Factors AS, at Africa Academy of Management 3rd Biennial Conference in Nairobi, 2016

(If you're interested in reading the entire paper, please contact bze@human-factors.no)

This paper summarizes experiences from a number of consultants and facilitators who have applied the tool in Africa and presents data on Red, Blue and Green in relation to a few African countries. The aim of the paper was also to explore similarities and differences in terms of the tool's application in the European/Western and African contexts; as well as explore whether the categories of Red, Blue and Green are perceived differently in the workshops. The paper also recounts suggestions for improvements and critical comments.

See attached: "Trainer experiences applying Diversity Icebreaker in 15 African countries (Canney Davidson et al., 2016) - AFAM, Nairobi"

4.6 The effects of Red, Blue and Green on team-processes and -results.
Ongoing research in cooperation with Alon Lisak, Hebrew University.

Background: In the certification-documentation from 2013, we reported results from 21 teams (p. 38) indicating that:

- The higher the aggregated (the sum of individual scores) preference for Green the more Innovation observed at team level
- The higher the aggregated preference for Blue, the more Goal achievement
- Interestingly, the higher the aggregated preference for Red was the more both: Innovation and Goal achievement; furthermore, the effect of Red was stronger in both cases than respectively the effect of Green and Blue.

However, the sample including data from 21 teams was too small to yield significant results. In addition, the outcome variables (Innovation and Goal-achievement) were based on self-report – just as the teams' levels of Red, Blue and Green. This was the principal caveat and critic of this study, i.e. that dependent and independent variables had same source.

We therefore decided to search for research partners that could investigate the diversity in Red, Blue and Green at team level and team-outcomes, and with more rigorous outcome assessment.

A group at the Norwegian School of Management had presented a study of the effect of not sharing information between team members, and how this could lead to a negative spiral of interaction. This group, however, declined our invitation to do research investigating whether DI as an intervention could lead to more openness and thus the opposite effect (this opposite effect, a "positive spiral" is conceptualized in the *Innovation booklet*, Ekelund & Moe, 2016; see attached materials).

We have encountered a research at the Hebrew University, Alon Lisak (who had been investigating individual differences and their implications for team-outcomes together with Miriam Erez), who was positive to the idea. He is now in the process of replicating the study described above, employing the

Diversity Icebreaker in a Likert-scale format. The aim is to use the DI-model of individual differences in order to study the configuration of Red, Blue and Green in groups and their impact on effects in relation to both Innovation, Goal-achievement, as well as the more "Red-oriented": Commitment and Satisfaction.

Alon Lisak is in the process of gathering data and ambitions behind this ongoing research is to see whether the ideas of Red, Blue and Green team-roles and their different effects at team-level is grounded. The classic models, building on Belbin and Jungian typologies, have so far not been confirmed in convincing way.

4.7 Mapping of Red, Blue and Green in written communication – significance: criterion validity

Ongoing research in cooperation with Kenneth Riopelle, College of Engineering, Wayne State University, USA

Will written material and communication produced by people with a strong Red, Blue or Green preference be saturated with words congruent with these colours? Would a text analysis be able infer about preferences and values of the sender?

This research question stems partially from our practical experiences and partially from previous research.

In our practical experience as DI workshop facilitators, we often saw the participants commenting on both written materials and utterances of other participants as being typically Red, Blue or Green, e.g. "using these word, talking about facts, figures and formulas; about security, concreteness and history – this is very Blue!".

Furthermore, research and theoretical explorations of Red, Blue and Green as cognitive styles as well as the relations of the three colours with values (see documentation for 2013 certification, p. 58 and p. 59) also suggest that there may be differences in what kind of text communication different people may produce.

A research approach initiated by Kenneth Riopelle and Julia Gluesing, is an idea to create a Red, Blue and Green dictionary that can be used both in research and coaching practice. This is inspired by their previous research (REFERENCE).

In a research project with the Diversity Icebreaker, we see at least three different hypothesis/assumptions, related to the abovementioned research question, which could be tested with this methodology:

a) If we had access a group that has scored the Diversity Icebreaker and their aggregated score is high on Green, for example, we would assume that we find more words aligned with the Green part of the dictionary in their written communication;

b) If we had access to written documents produced within organizational cultures, which we have reasons to believe are one colour or another (and studies like 4.1 described above could be used to extrapolate and predict certain differences in relation to different organizational cultures), for examples a company of designers whom we assume are Green, we would hypothesise that these documents would also contain more "Green" vocabulary;

c) In qualitative analysis we could explore the communication of individuals in order to map their preference in practice relevant for Red, Blue and Green communication styles (an example of this will be given below).

How can we create a Red, Blue and Green dictionary with such purpose of text analysis?

We have so far created four different sub-dictionaries and their construction process has been based upon four different sources:

- core concepts for each of the colours – extracted from the 42 statements comprising the Diversity Icebreaker questionnaire
- 45 Red, Blue and Green "behavioural descriptions" (the DI "observation form" – attached, created for criterion validity study presented in the documentation from 2013, p. 42;)
- Qualitative analysis of 50 flipcharts produced by the participants in the Diversity Icebreaker workshops
- Value statements presented by 12 work groups differentiated by their colour preference

In order to test this approach, Kenneth Riopelle used the LIWC (Linguistic Inquiry and Word Count) text analysis tool with the abovementioned Red, Blue and Green installed.

LIWC reads a text file, one word at a time. As each word is processed, the dictionary is searched for a match. If a match is found, the appropriate word category scale(s) for that word is/are incremented. As the target text file is being processed, counts for various structural composition elements (e.g., word count and sentence punctuation) are also incremented.

Kenneth Riopelle reports from this first, trial analysis (quoted verbatim, source: e-mail communication):

"

1. I took your spreadsheet with all the Blue, Red and Green data and selected key words and created three text files: Blue.txt, Red.txt and Green.txt

2. I used these three files to create a custom LIWC dictionary called RBG_Dictionary_V2.txt'," which enables us to calculate the percent that a text is Blue, Red or Green.

3. I ran the three text files (Blue.txt, Red.txt and Green.txt) against the "RBG_Dictionary_V2.txt" to ensure that we have clear and distinct separation of the three types. So far, so good.

This file lists the 92 standard categories that LIWC uses to profile text, and I have highlighted a few categories that appear to discriminate one of the Diversity Icebreaker types. For example, people with a Green profile use more Words per Sentence (WPS) and Six Letter or more words (Sixltr). Red people have more Affect and Positive Emotion (posemo) and are more Social and refer to Friends more often. Here we may do some statistical correlation or regression modelling to discern how the existing 92 categories discriminate the three Diversity Icebreaker preferences.

Now that I had a custom "[Red, Blue and Green]_Dictionary_V2.txt" with an initial face value, I decided to created two email test sets. The two sets of text have some "face" value for us, since we know the e-mail conversations and the people exchanging messages.

Table 11. *Below are the results of an analysis of individuals in an email exchange between 8 persons.*

Person	WordCount	BlueSummary	RedSummary	GreenSummary
01_Bjorn_ION_02232016.txt	112	0,00	2,68	0,89
02_Schon_ION_02232016.txt	89	1,12	1,12	1,12
03_Jane_ION_02232016.txt	111	0,00	0,00	0,90
04_Iris_ION_02232016.txt	126	0,00	1,59	0,79
05_Sonja_ION_022232016.txt	26	0,00	3,85	0,00
06_Janet_ION_02232016.txt	101	1,98	1,98	0,99
07_Sully_ION_02242016.txt	89	0,00	1,12	0,00
08_Davina_ION_02252016.txt	58	0,00	1,72	0,00

It seems clear that the word text analysis with this dictionary created differences that are relevant to explore in further studies, both for research as well as practical communication awareness and training.

"

Our ideas for further research, which could potentially contribute to Diversity Icebreaker's criterion validity, include identifying published documents from organisational settings and cultures, which we could assume with certainty to be more Red, Blue or Green, and attempt the LIWC analysis with a Red, Blue and Green dictionary installed on smaller samples.

Alternatively, we could also ask individuals with a dominant Red, Blue and Green preference as measured by the Diversity Icebreaker questionnaire, to contribute written material they have created (e-mail communication, journals, etc.) for analysis.

This research approach offers exciting avenues for future studies and, potentially, practical applications. If some of the assumptions above are confirmed, e.g. that the people with a strong Red preference use more words and expressions from the Red part of the LIWC dictionary, it would constitute evidence for the Diversity Icebreaker's criterion validity.

Further reading on WORDij and LIWC:

A chapter where Ken Riopelle and Julia Gluesing used text tools of WORDij and LIWC among others to illustrate the use of such softwares for text analyses.

5. Digital Diversity Icebreaker

Recognizing the need in some areas of the market for a digital version of the DI questionnaire, as well as certain practical considerations and new possibilities such version would open for us, we have started a process of creating this solution. At present we have arrived at a functioning, mobile-friendly and self-scoring digital version of the DI questionnaire. The availability of this version has been communicated to our existing clients and they were granted the possibility to use it with extra guidance from us. It is not, however, listed on our website or in the order form.

NB: as this digital solution has to be considered a separate version of the DI questionnaire (due to a different scale that is used here), the purpose of this section is only to orient DVN GL that this project is underway and this version is not subject to recertification at present.

Below follows the overview of the digital version of the DI questionnaire:

Platform: the digital version uses EasyFact platform for online questionnaires and surveys. It allows for multiple respondents at the same time, automatic calculation of results, etc. More information: https://easyfact.no/

Content: the digital version is comprised of identical set of items as the paper version. The questions are presented in a random order, differently than in the paper version. In the beginning, there is a different set of instructions (related to scoring of the questionnaire on a mobile or a PC) and a short consent form orienting respondents that their answers will be processes anonymously. At the end, there is also a set of additional demographic questions for norm building and the results are presented differently (see below).

Scale: the digital version employs 7-point Likert scale of agreement (vs. the semi-ipsative scale used in the paper version). The items are rated separately by the respondents.

Administration: the questionnaire can be administered before, during or after a workshop or an event – or independently from any event – via an open link and a QR-code.

When administered during the workshop, a special PPT-slide is used to "kick-start" group-work (with paper version, the participants use the second page of the questionnaire as a starting point when they are about to describe the three colours – see the certification documentation from 2013). This slide includes stimulus in form of 5 words per colour preference. These words were selected by super-users of DI after text analysis of the 42 DI items (the PPT is attached, see "stimulus words for digital ver. of DI_2016.ppt").

Results: the results – scores on three colours, Red, Blue and Green – are presented to the participants at the end. They are calculated automatically and accompanied by averages in the population for comparison and/or the abovementioned stimulus words and/or a link to more information on the colours and exercises. In a typical workshop setting, they are presented without the stimulus words; following conferences and in more individual-use context, they are presented with the stimulus words and/or link to more information.

Important facet of the results presented to the participants in this digital version, is that they are standardized and recalculated in a way to be comparable with the paper-version results and our general norms (built using the semi-ipsative paper version of the questionnaire). This involves a few steps:

First, the raw aggregated scores per colour (i.e. answers on a scale from 1 to 7 on each item pertaining to a given colour are summed up) are within-person standardised. This procedure takes

care of the fact that people use the scale differently (some tend to use the middle, either ends, or the whole spectrum of the scale).

Second, the within-person standardized Likert scores are adjusted – each colour separately – to match the norms and format of the semi-ipsative questionnaire. This is done using a mathematical formula that matches the within-person standardized Likert score with it's equivalent on the semi-ipsative scale, on the same colour, based on means and standard deviations. The means and standard deviations for the Likert scores are taken from previously gathered Likert data (see the documentation from 2013), the means and standard deviations for the semi-ipsative scale are taken from our Norwegian norms.

Thus transformed scores also sum up to 84 (in most cases) and are comparable with the results from the paper questionnaire.

As it was stated before, the digital version of the questionnaire is not subject to this recertification and therefore the mathematical formula used to calculate the scores will not be presented here. The exact formula will also change once we have gathered enough of data for norms for this version. This is because it hinges on two fixed values, mean and the standard deviation, and these were so far taken from a limited database gathered with Likert data.

Additional questions: the demographic questions we ask following the DI items include: age, gender, country of residence, country of origin, work/profession description, market branch one works in (follow the link/QR-code above to test the digital DI and see the questions in detail). For each of these questions, an alternative "I refrain from answer" is first and clearly marked.

Group report: although we still have to do it manually, remotely from the office, we have the possibility to produce a group profile, compared with norms and different professional groups, in real time during the workshop. We can then send it to the facilitator running the workshop, who can use it for pedagogical purposes.

Applications: the goals of introducing the digital version were on the one hand to be able to replicate the typical use of the Diversity Icebreaker, and on the other – explore new possibilities. At present, the digital version is applied:

a) in classic Diversity Icebreaker workshops – as close to the regular workshops with participants filling out the questionnaire together, working in groups, etc. Only difference is the stimulus material (described above).
b) in virtual workshops – workshops with participants present virtually, and not in the same room. The technology we use to conduct these workshops, at present, is called AULA®. More information: http://diversityicebreaker.com/homepage/application/virtual-workshops
c) As an ad-on to conference presentations – we share link to the DI questionnaire with audiences on lectures and conference presentations when the tool or some of it aspects is presented and no actual workshop is actually conducted.
d) In webinars – similarly to c), the digital version comes in hand, when DI is presented in a webinar context.
e) Individual feedback (planned) – we plan to launch a possibility for individuals to access the DI questionnaire, score it and receive a more exhaustive feedback, than what is available now.

Conclusions: benefits and caveats

There are many benefits related to having the possibility to use such digital version:

- Possibility to create group profiles in real time
- Filling the questionnaire inn beforehand by the participants, to save time during workshops
- We can send the link instantly to the client/facilitator running the workshop: an important back-up plan in a situation when they forgot to order questionnaires, the courier with the paper questionnaires did not reach them, etc. Inasmuch, it becomes a "safety feature" making our clients more secure to run the workshop.
- The link is being sent by e-mail, meaning that we can spare on shipping costs
- It opens possibility for many different areas of use
- Digital version is also more ecological

Some caveats include:

- The mathematical formula is dependent on standard deviation and average, which means that it will be only be fine-tuned once we gather enough representative data from the Norwegian population using the digital solution. However, given the current, fast pace of data gathering, it is a matter of time.
- Using the digital questionnaire in workshop requires that all participants have access to the internet and have smartphones. This poses a serious limitation for some location if this version is to be used in a workshop context.

Given the few caveats, we will continue to work with the digital version of the Diversity Icebreaker, and especially in these areas:

- Fine-tuning of the mathematical formula used to transform the scores (gathering more data, in essence)
- Developing train-the-trainer materials
- Rebuking any bugs related to filling out the questionnaire on mobile devices
- In the future, switching to a different provider who could create a more updated solution in terms of design as well as a more automated one

We do not have an intention, however, to replace the paper questionnaire – which as established product – with the digital version in near future.

6. New material for participants, facilitators and customers

Producing high quality and updated material for DI users (facilitators, consultants, leaders, etc. using the tool) and workshop participants is very important for us. Since the certification in 2013, we have produced new materials and revised existing ones in terms of content and layout alike.

Below follows an overview of the new and updated materials with short descriptions. If a physical copy of a given material is available, it has been attached to recertification documentation; otherwise, a link to the digital version is provided.

Material for participants

New

1. *Diversity Icebreaker Innovation Booklet* – The booklet was written by Bjørn Z. Ekelund (Human Factors AS) and Toril Moe (NTNU RKBU Central Norway and Nord University Levanger) and presents ideas on how to use Diversity Icebreaker (DI) in creativity and innovation processes. We view the work on innovation as an important area of the Diversity Icebreaker's application and this booklet as an important contribution. (Note: the paper copy attached is produced locally – the booklet is in the final stages of the design/printing process).

2. *Red, Blue and Green stickers* – similar to *badges* (in each colours, e.g. with "…but also Red and Green" written on the Blue badge).

3. *Digital Diversity Icebreaker* – as described in section 5.

Revised

4. *Diversity Icebreaker Personal Workbook* (English and Norwegian) – Revision of the workbook's content (only language and style improvements, additional updated information about the tool added at the end) and an entirely new layout to make it more user-friendly and inviting for interactive use.

New material for facilitators

New

5. *The Blue creativity mat* – a mat that can be used pedagogically to facilitate generation, categorization and further development of ideas in team-workshops. Complete description and illustration available in the *Diversity Icebreaker Innovation Booklet*, p. 31. Note: this mat is at the moment produced on special orders from clients willing to use it in innovation processes.

6. *Diversity Icebreaker II: Further Perspectives* - A collection of research articles and conference presentation papers about the Diversity Icebreaker from 2008-2014, edited by Bjørn Z. Ekelund and Piotr Pluta (226 pages). More info…

7. *Diversity Icebreaker in Academic Institutions* – a white paper describing the use of the tool at various higher education institutions around the world, explaining the rationale behind the application, various forms and outcomes, case studies and theory behind. More info…

Revised

8. *Excel-matrix to calculate group results* –simplified, better layout and new groups added for comparisons.

9. *PowerPoint presentations* – available to facilitators as an aid in running the classic Diversity Icebreaker workshops, now updated with information about the DNV GL certification.

    links to a user-only website where you can download these materials:
    English and Norwegian

10. *Diversity Icebreaker instructional film* – now available also on a USB-memory stick (previously only DVD). More info…

11. *Diversity Icebreaker I: How to Manage Diversity Processes* - A 2008 collection of research and articles on the Diversity Icebreaker edited by Bjørn Z. Ekelund and Eva Langvik (179 pages). The revision for the 2nd edition included extensive editorial work with the content (clarification, update and style improvements) as well as redesign of the layout. More info…

12. *Diversity Icebreaker User Manual* – thorough stylistic and language revision of the English version of the Manual, with help of a native speaker; the Norwegian version has also been slightly revised and updated in this regard. Both versions now also feature explanations about conducting the process for very small and very large groups.

7. "Trialogue®" – an alternative brand of the Diversity Icebreaker®

As of 2016, we have registered an alternative brand to the Diversity Icebreaker that will be used by some of our partners and clients.

The background for introducing this name/brand is that in some cases our clients expressed their reservation for the term "diversity" used in the Diversity Icebreaker name. Indeed, this term has oftentimes been used historically in HR in relation to the more superficial, demographic kind of diversity (i.e. gender, age, ethnicity, nationality, etc.), whereas the Diversity Icebreaker® operates with the kind of a deeper, psychological diversity (differences in our cognitive preferences). Furthermore, the term "diversity" raises negative connotations in some professional environments as related to quotas, etc. We have therefore chose the name "Trialogue®" as alternative brand to be used in some context.

The word itself stems from the fact that the model consists of three preferences labelled with colours (the prefix "tri-") and that one of the tool's predominant purposes is to enhance good communication between people, and "dialogue" signifies such good and respectful communication (the suffix "-logue"). One can thus interpret the name "Trialogue®" as a "dialogue between three parties".

Apart from the name and logo, Trialogue® is **identical** in every possible aspect with the Diversity Icebreaker®: same materials (only a limited range of materials available at present), application and research behind).

Furthermore, we have also made a Trialogue® version of the tool's website – access it here: www.trialogue.com.