YOUTH: GROWING UP HEALTHY, SAFE AND WITH EQUAL OPPORTUNITIES

KNOWLEDGE PROGRAMME **TNO YOUTH**

TNO innovation for life

READING GUIDE

YOUTH: GROWING UP HEALTHY, SAFE AND WITH EQUAL OPPORTUNITIES

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CONTENT

TNO PROGRAMME:
YOUTH: GROWING UP HEALTHY, SAFE AND WITH EQUAL OPPORTUNITIES

All children should have every opportunity to grow up healthy. This doesn't mean that every child needs *the same* care and support.

The care for youth requires something other than a one-size-fits-all approach. It is all about what works for which child. That is why TNO is helping to increase the resilience of parents and children and empower professionals making the decision for the most suitable care.

THE CORRECT AND SUITABLE CARE

Growing up healthy is a right for all children. Early prevention, e-Health, and social and technological innovations play an important role in this. The right and most suitable care and support in the right place and at the right time are important. For all children, but even more so for children in vulnerable situations. We are also focussing on these children.

Care and support must be in line with the environment of families and must be easily accessible. This is precisely why we develop (digital) innovations as much as possible in coordination and collaboration with the young people and parents themselves.

This e-publication contains a selection of our knowledge areas with social impact:

1. THE FIRST 1000 DAYS

To ensure that children have the best possible chance of growing up healthy and safe from the start, we develop interventions focussing on the first 1000 days. This includes CenteringPregnancy, which has been shown to prepare pregnant women better for childbirth and parenthood, as well as to lead healthier lives. This leads to a good start for their (future) baby and health benefits later in life.

2. RESILIENT YOUTH

Increasing children's resilience enables them to use their talents and strengths so that they can better cope with hurdles in their lives. TNO sees the importance of looking at effective elements of interventions that increase resilience, such as in anti-bullying programmes.

3. FLEXIBLE AND DIGITAL

TNO is studying the possibilities of providing more flexible care, for instance by deploying digital innovations so that personalised care can be offered.

4. CORONA

The corona virus appeared unexpectedly. A applied research institute like TNO, in particular, can use the knowledge and experience of previously developed interventions or tools to respond to this. For example, we developed decision support for corona vaccination, based on a previously developed strategy for HPV vaccination of girls.

JOINT RESEARCH

Every day, we work in a multidisciplinary team together with professionals, parents, young people, and organisations on scientifically based and innovative interventions. Exchanging knowledge and experience and doing research together prevents having to reinvent the wheel again and again. In addition, it provides interventions and tools that work well in practice, and have the support from everyone to start working with them.

In the coming years, we will continue to focus on the development of personalised care and on research what works, always in collaboration with professionals, parents, young people, and the organisations involved. Together, we build on effective factors, suitable to the child. Because every child is entitled to suitable care or a helping hand.

Symone Detmar,
head of the Youth knowledge programme at TNO

TNO INVESTS IN **YOUTH**

ll children must be given every opportunity to grow up healthy, that is what we as TNO are working on with our partners. In this video of over 2.5 minutes, Symone Detmar, head of the Youth Knowledge Programme, introduces our e-publication in which we explain some of our projects.

Click here for the video

THE FIRST 1000 DAYS

Determining with parents what is necessary and desireable

The D-score: Direct insight into children's development

Monitoring child development

Centering Groups: Benefits for mother, child, and society

To ensure that children have the best possible chance of growing up healthy and safe from the start, we develop interventions focussing on the first 1000 days. These first 1000 days – from pre-conception to two years – are crucial for the child's development, health, and well-being.

DETERMINING WITH PARENTS **WHAT IS NECESSARY** AND **DESIRABLE**

Preventive Youth Health Care assesses the development of all newborn, infants and children. Together with partners, TNO develops tools to dialogue with parents what is needed.

1. ALPHA-NL

'If we want children to grow up in a favourable and safe environment, it is important to talk with parents-to-be about their psychosocial circumstances, needs, and expectations of parenthood, as early as possible.' That is what Remy Vink of TNO says. So, together with midwives, she developed the ALPHA-NL, originally a Canadian tool, for Dutch practice.

NEEDS

Pregnant women fill out a questionnaire, prior to the second or third consultation with the midwife. During the consultation, the midwife discusses the answers and explores with the prospective parents where additional help or psychosocial support may be offered.

Recent TNO research has now shown that the ALPHA-NL is a reliable and accepted tool for parents and midwives to dialogue psychosocial needs as a preparation for parenthood.

PRENATAL HOME VISITS BY PREVENTIVE YOUTH HEALTH CARE

From July 2022, new law permitted municipalities to offer prenatal home visits through Preventive Youth Health Care, to vulnerable families and pregnant women who could use a helping hand in psychosocial support. The midwife may suggest this as a result of ALPHA-NL and the conversation with the expectant parents.

2. GIZ MATERNITY CARE

When a child is on the way, the maternity carer visits the expectant parents at home for an intake to estimate how many hours of maternity care will be needed. ‘That way of working was very supply driven,’ says Remy Vink, sociologist and researcher at TNO. ‘You may get a better picture if you look, together with the parents-to-be, at what their needs are, depending on the family situation.’

MORE TOPICS

Vink and colleagues experimented from 2017 to 2020 with a comprehensive interview methodology for the maternity care intaker, the GIZ (Gezamenlijk Inschatten Zorgbehoeften, or Joint Assessment of Care Needs). This GIZ methodology has existed since 2013 for district teams and Preventive Youth Health Care. Vink adapted the methodology for maternity care intakers with GIZ developer Marjanne Bontje of the Municipal Health Service Hollands-Midden.

In the dialogue between professional and parents, the GIZ helps to identify the family’s strengths, and developmental and psychosocial needs. ‘In the GIZ methodology, many subjects are covered: psychosocial circumstances, the parents’ own childhood, future parenthood, living conditions, life events.’

‘So, the intake is also used as an opportunity to assess broader needs, with an important common thread: a shared decision between parents and professional about what is needed and what is required. Because it literally visualises different themes, the GIZ is also suitable for non-native speakers and people with low literacy levels.

FATHERS

Important findings made by Vink during the pilot project: expectant parents find an intake with the GIZ-method more pleasant than the initial standard maternity care intake. ‘Parents also reported that more subjects are being discussed in this way. Fathers also seem to feel more involved. And for the intaker, the methodology offers something to hold on to.’ Partly based on these results, the National Standard for Indication of Maternity Care (2008) is being changed, on the basis of which health insurers finance maternity care.

Vink would like to see not only the intaker working with the GIZ, but also the maternity assistant, who can then come back to it after the birth. After all, the maternity assistant is literally at the bedside of the newborn parent.

GIZ IN OTHER SETTINGS

‘At the moment, the method is mainly used in Preventive Youth Health Care,’ says researcher Meinou Theunissen of TNO. ‘The method is used on a small scale in maternity care, but midwifery practices do not use it yet, even though the lifestyle of the pregnant woman, one of the domains covered by the GIZ, is important for reducing risks related to parenting and development of the future child.’

If midwives, maternity care, and Preventive Youth Health Care use the GIZ, this will create a common assessment framework. Theunissen: ‘With such a continuous line, It is easy for other professionals in the chain involved in the family to look back. The same ‘language’ is used throughout the chain of care: everyone is referring to the same thing.’

DREAM

In collaboration with other partners, TNO is studying how the GIZ-method can be adapted and made suitable for midwifery care. ‘At no time in a child’s life are there so many contact moments with professionals as during pregnancy and around birth, it is a huge window of opportunity’ Vink notes. ‘You can offer so much if you make sure that the transfer between midwives, maternity care, and Preventive Youth Health Care is aligned and the needs of the parents remain in focus.’

VULNERABLE CONDITIONS

From 1 July 2022, Preventive Youth Health Care may conduct prenatal home visits among vulnerable groups and the GIZ has been used as a pilot. Theunissen: ‘After that, I would like to make the GIZ suitable for Preventive Youth Health Care professionals who work with families in low socio-economic circumstances. It is precisely these families where Preventive Youth Health Care professionals hesitate to discuss lifestyle issues, while these parents have an increased risk at an unhealthy lifestyle which in turn may influence child rearing, and child development.’

‘My dream,’ says Vink, ‘is for midwives, maternity care intakers and assistants, Preventive Youth Health Care nurses, and physicians to work as a team, to give every child the best possible start. The GIZ methodology can be a tool for the optimal first 1000 days of a child’s life.’

THE D-SCORE: DIRECT INSIGHT INTO CHILDREN'S DEVELOPMENT

How much taller is a child compared to its peers? Or compared to an earlier moment? A growth chart will show you this in an instance. But how can we track a child's social, cognitive, and motor development? Statisticians Iris Eekhout and Stef van Buuren devised the D-score for this purpose.

A CHILD GROWS...

Preventive Youth Health Care measures the growth and development of children. When you measure children, you can compare whether they are taller, shorter or 'normal', on average, compared to their peers. Moreover, you can see progress over time in a growth chart – is the number of centimetres or kilograms increasing?

... AND DEVELOPS...

Information on social, cognitive, and motor development is more complicated. When asked if a child can say two-word sentences or walk, the answer is 'yes' or 'no'. But what do such dichotomous answers say about his or her development in general when you compare them? Because ideally, you want to know whether the child, on average, is developing normally compared to earlier measuring points and to peers, not for each milestone, but globally.

... AS REGULARLY RECORDED BY PREVENTIVE YOUTH HEALTH CARE

Preventive Youth Health Care uses the Van Wiechen questionnaire to map a child's cognitive, social, and motor development. For children up to 2 years old, Preventive Youth Health Care asks 57 questions at set times to which a 'yes' or 'no' answer can be given. It is difficult to compare the answers on individual milestones with the past and with peers.

PARENTS ALSO KEEP TRACK OF MILESTONES...

And what if an assessment at the Well Baby clinic takes place earlier or later? Then the comparison with average children at the assessment age is no longer valid. In addition, parents like to track the development of their child and often want to share this information digitally. More flexible data collection means that a different comparison tool is needed.

... SO HOW DO YOU MAKE A GOOD COMPARISON?

Two statisticians at TNO, Iris Eekhout and Stef van Buuren, came up with a solution: the D-score (Developmental Score). A scale based on the 57 Van Wiechen milestones across various domains, the answers are combined into one developmental score. They based the D-score on the Rasch model developed in the 1960s.

THE D-SCORE IS USEFUL FOR PREVENTIVE YOUTH HEALTH CARE...

It allows Preventive Youth Health Care professionals to see the development on a social, cognitive, and motor level in a graph. Van Buuren: 'The D-score is a unit of measurement, like Celsius for measuring temperature.'

...MAKES INTERNATIONAL COMPARISON POSSIBLE...

Suppose you want to know whether children in other countries are doing just as well. Around the world, as many as 150 different tests are used to assess development. That's like comparing apples to oranges!
Here, too, the D-score offers a solution. Van Buuren and Eekhout examined 20 tests and found that converting it to the D-score leads to reliable comparisons. Eekhout: 'Now we can compare whether children are ahead or behind in their development on an international scale, which can help when, for example, you have to make choices for development aid.'
Van Buuren: 'Or when assessing whether children in a country fare better if you use an intervention.'

...IS HELPFUL IN META-ANALYSES...

In addition, the D-score is useful for analyses in which you compare different studies with each other, so-called meta-analysis. Eekhout: 'Researchers often use different measuring instruments. Now you can convert the results to the D-score and look at similarities and differences.'

... OR TO ASSESS WHICH QUESTIONS WORK BEST

Van Buuren: 'You can even use the D-score to find out which questions describe the general development best. Questions that add little information can be left out of the questionnaire. You could further refine the D-score with digitally adaptive questions. For example, if the answer is 'yes' to the question of whether the child can walk, a more specific follow-up question follows: can the child jump?'

IN THE NETHERLANDS, PREVENTIVE YOUTH HEALTH CARE EXPERIMENTS WITH THE D-SCORE...

At the moment, two Preventive Youth Health Care centres are testing the D-score. Van Buuren: 'The goal is that all Preventive Youth Health Care centres in the Netherlands will use D-scores on a daily basis. Professionals don't have to do anything new. When they enter the data, a development diagram appears automatically and directly on the computer screen via the digital link between the child's file and our calculation tool JAMES.

... INTERNATIONAL INTEREST HAS ALREADY BEEN AROUSED...

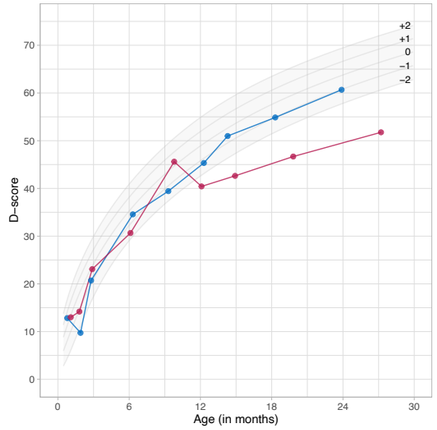
There is already international interest in the D-score. Eekhout: 'Through a WHO (World Health Organisation) project, Harvard University and TNO, among others, are developing an instrument with the D-score as the unit of measurement. In addition, we are in discussion with the World Bank and Unicef to further develop the D-score for children up to the age of 6.'

... AND MORE OPPORTUNITIES LIE AHEAD!

Van Buuren: 'It would be great to have a continuous indicator for all ages. In that case, you could follow social development during puberty, for example. Musing: 'And how are you developing in comparison to yourself and others when you are 30 or 60?' In short, the D-score makes measuring, comparing, and dreaming possible.

Read about what the D-score is and how it works. You will also find the tool to calculate the D-score with data.

View here what a D-score graph looks like.



MONITORING CHILD DEVELOPMENT

Some children crawl faster than others. But how do you, as a Youth Health Care professional, observe in time that there is cause for concern? Statistician Paula van Dommelen and physician and epidemiologist Paul Verkerk of TNO studied which developmental milestones may predict certain disorders.

Youth Health Care physicians and nurses find it often difficult to assess whether a child develops normally or not. 'You don't want to worry parents unnecessarily,' says Paul Verkerk, MD and epidemiologist working at TNO. 'This is why Youth Health Care professionals often take quite some time before they refer children for follow-up testing to a specialist.

FEATURES

In the Netherlands, the Dutch Development Instrument (DDI), a modification of the Gesell test, is used by CHC to assess the development of children. The DDI covers three domains of child development: (1) communication; (2) fine motor activity, adaptive/personal/social behaviour; and (3) gross motor activity. The DDI is administered by trained healthcare professionals at visits scheduled at ages 1, 2, 3, 6, 9, 12, 15, 18, 24, 30, 36, 45 and 48 months. Youth Health Care professionals administer and register each milestone according to a uniform protocol.

TNO studied how certain disorders can be detected earlier without having to refer many children without these disorders. Verkerk: 'We did this, for example, to better detect a developmental language disorder (DLD). His colleague, statistician and researcher Paula van Dommelen, adds: 'And we looked which combinations of milestones could predict autism spectrum disorder, Duchenne muscular dystrophy (DMD) or limited intellectual functioning.

RARE

Rare disorders are more difficult to detect. Van Dommelen: 'This is not a surprise, because Youth Health Care professionals assume at first that every child is developing normally and that there are always differences between children. At the same time, this means that a Youth Health Care professional has more difficulty in detecting when a child may have a for example DMD.'.

Van Dommelen: 'DMD affects 1 in 5,000 boys worldwide. DMD is typically diagnosed at around 4-5 years of age.'.

'Nothing can be done against the muscle disease itself', says Paul Verkerk, 'but timely treatment can delay the moment when boys end up in a wheelchair or die. A timely diagnosis has also the advantage of providing early reproductive options, important information for family planning and an opportunity for good parenting. Furthermore it may prevent the strain and costs associated with a protracted diagnostic pathway.'

DISTINCTIVE

Van Dommelen and Verkerk studied which milestones are distinctive for DMD. Van Dommelen: 'At a young age, you can already see a difference at the group level in milestones

between children who are later diagnosed with Duchenne and those who are not. Already at the age of 2 or 3 months, characteristics deviate in all three developmental domains.'

'Between the first and third year, certain milestones are so strikingly different that they are useful for the early detection of DMD,' says Van Dommelen. 'For example, milestones such as not being able to pull oneself up to a standing position and not being able to sit stable without aid at 12 months or not being able to walk alone at 18 months. In addition to differences in motor skills, we also saw clear differences in language development, such as not responding to a verbal request at 12 months.'

'Based on a combination of specific milestones, 8 out of 10 children can be identified as having an increased risk of Duchenne before they are four years old,' Van Dommelen concludes.

SMART GUIDELINE MODULE

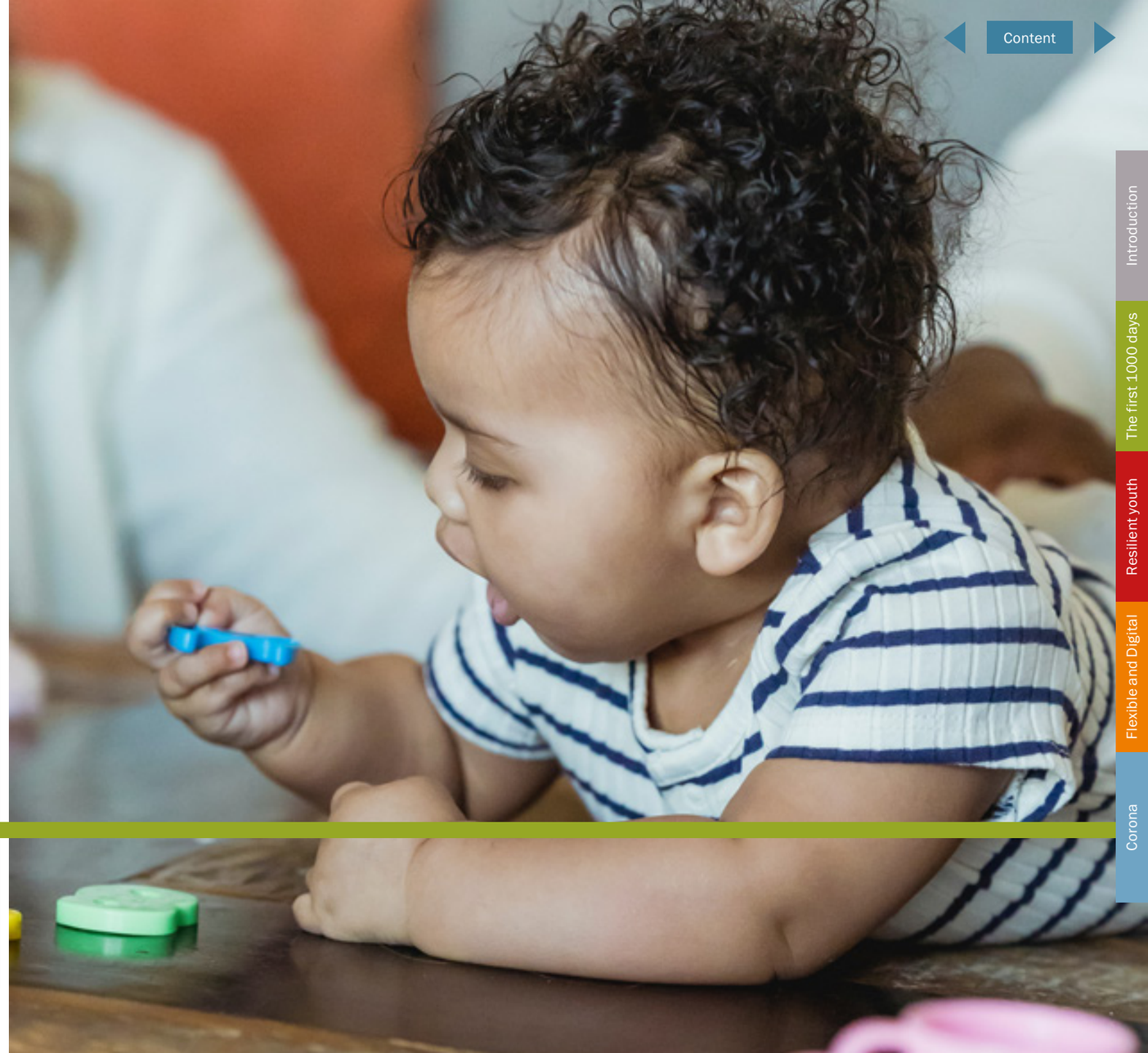
Verkerk: 'A decision support system may help a Child Health Care professional to detect certain disorders.' TNO has therefore also developed the Smart Guideline Module.

READ:

About the detection of Duchenne in 'Early developmental milestones in Duchenne muscular dystrophy' by P. van Dommelen, O. van Dijk, J.A. de Wilde, & P.H. Verkerk (2020, Developmental Medicine & Child Neurology)

About Limited intellectual functioning in 'Predictive validity of developmental milestones for detecting limited intellectual functioning' by E. Vlasblom, M.M. Boere-Boonekamp, E. Hafkamp-de Groen, E. Dusseldorp, P. van Dommelen & P.H. Verkerk (2019, PlOS One)

About ASD in In hoeverre dragen de alarmsignalen uit de Jeugdgezondheidszorg-richtlijn Autismespectrumstoornissen bij aan de vroegsignalering van deze kinderen? by D.J.A. Bonnemaijer-Kerckhoffs, S.I.Wins, P. van Dommelen, & P.H. Verkerk (2021, Tijdschrift voor Jeugdgezondheidszorg; 53: 8-13)



CENTERING GROUPS: BENEFITS FOR MOTHER, CHILD, AND SOCIETY

Focussing on problem prevention during and after pregnancy. That makes sense for both mother and child. But what are the economic benefits, especially later on? Midwife Marlies Rijnders researched this for the Centering Pregnancy method.

'Thanks to Centering Pregnancy, pregnant women are better prepared for childbirth and parenthood,' says Marlies Rijnders, research-midwife at TNO. 'Midwives feel they have more time to talk and they know their clients much better.'

ECONOMIC BENEFITS

A third of the Dutch midwifery practices now offer the group meetings. 'We were curious to know whether the method would also bring long-term health benefits and therefore economic benefits.'

The Centering Pregnancy method replaces – after the first check-up – the individual appointments with a midwife. A group of pregnant women meet under the guidance of a midwife and counsellor and exchange experiences and information on all kinds of topics concerning pregnancy and future parenthood: prenatal screening, healthy living, relationships, division of tasks, childbirth, etc.

DIFFERENCES

The Centering Pregnancy method, originally an American method adapted to the Dutch situation, has been in use in the Netherlands since 2012. With the Leiden University Medical Centre and midwifery practices, TNO looked at differences between pregnant women who received one-on-one care from a midwife versus women who participated in Centering Pregnancy.
'Centering Pregnancy appears to have an effect on health behaviour', Rijnders says. 'The pregnant women consume less alcohol, smoke less, exercise more, start breastfeeding more often, and have less high blood pressure.'

HEALTH BENEFITS

In the long term, these positive effects can have consequences for the health of women. 'For example, women are less likely to suffer from cardiovascular disease later in life, and due to breastfeeding their children are less likely to have asthma, according to literature. From an individual point of view, this is, of course, a great gain. But what does it mean economically in terms of healthcare costs?'
The positive health effects were therefore translated into long-term healthcare costs, and compared to the investment of the midwives, who run a group in pairs, sometimes have to rent a space, and spend more time with a group than the 10 minutes they would otherwise spend with an individual client.

LESS USE OF HEALTHCARE IN LATER YEARS

And the results? Rijnders: Centering Pregnancy costs 57 euros more than individual care per pregnant woman, but saves 133 euros over the course of a lifetime because both mother and child make less use of the healthcare system. The health insurance company, therefore, benefits in the long run.

Rijnders thinks it is peculiar that the midwifery practices invest and, in the end, it saves the health insurance company money. 'Talks are ongoing with the Dutch Healthcare Authority, insurance companies, and the professional association of midwifery practices to look for funding and continuity.'

CONTINUOUS LINE

Meanwhile, Rijnders also has another wish for parents and children. Centering Parenting was set up in 2014, where brand new parents talk to each other about parenting and parenthood, under the guidance of a (paediatric) nurse.
'I would like to see the Centering Pregnancy group automatically continue as a Centering Parenting group,' says Rijnders. 'Moreover, you can then introduce the paediatric nurse sooner – a 'warm transfer'.

'At this moment, the pregnancy group stops and the Well Baby clinic usually starts a Parenting Group until 6 weeks after the birth. This is often not the same group as during pregnancy, also because parents go to different Well Baby clinics, depending on where they live.'

'A continuous line fits well in the first 1000-day approach "a Promising Start,' says the researcher. 'And how wonderful would it be if you could discuss all your questions and uncertainties immediately after the birth, not only with professionals but also with other peer experts?

'The method provides individual and economic benefits'

CENTERING MODEL – HAS MANY FORMS

COVID

During the coronavirus outbreak in March 2020, many pregnant women of Eritrean origin appeared not to understand the RIVM rules for preventing the spread of the virus. At the same time, physical Centering Pregnancy meetings were cancelled. In record time, the “CenteringZorg” (Centering Care) foundation and TNO developed a specific online Centering version for the Eritrean group, with explanations on distancing, face masks, and information on the Covid vaccination.
The enthusiasm of Eritrean pregnant women for participation in CenteringOnline is growing. For other pregnant women, midwifery practices also offer Centering online, in hybrid, and/or in physical form. Information about Covid remains a theme during the meetings.

INTERNATIONAL

Centering-based Group Care for vulnerable pregnant women is being introduced in eight countries with the help of TNO. This involves both Centering Pregnancy and Centering Parenting in Ghana, South Africa, Kosovo, Suriname, Belgium, the UK, and the Netherlands.

DIABETES

The Centering Pregnancy-based method was further developed in a general practice in Meppel in 2020 and offered to a completely different group: people with type-2 diabetes. TNO is also working with LUMC to make Centering-based Group Care suitable for patients at risk of fatty liver at the gastrointestinal and liver outpatient clinic.
This healthcare model seems to be a good way of providing multidisciplinary, client-centred care. Healthcare professionals and clients get to know each other and themselves better and work together to find solutions to improve health.

Read more about Centering Healthcare

RESILIENCE

Content

Reinforcing children’s resilience enables them to use their talents and strengths so that they can better cope with the hurdles in their lives. That is why TNO is working on the development of science-based intervention programmes to increase the resilience of children.

Innovation is done with the target group

Are you developing tools or interventions for a target group? No, always with, says behavioural scientist Nicole van Kesteren of TNO. Side note: ‘There is no recipe for target group participation. But if it succeeds, innovation takes off.’

WHAT IS TARGET GROUP PARTICIPATION IN RESEARCH?

‘That, in all phases of innovative research, you collaborate on an equal basis with those for whom the end result is important. From the project proposal to the use of the findings and the implementation of the developed methodology.’

WHAT BENEFIT DOES IT CREATE?

‘Not only do you match precisely what is needed, but by doing the research process together, you also create support for proper implementation of a new method. This is important because the introduction of interventions or the use of a tool in the workplace is often a barrier.
Target group participation also makes that part of research easier. No one needs to be convinced of the usefulness, because everyone was already involved.’

IS IT DIFFICULT?
'Sometimes, because there is no recipe for target group participation. It takes time to work out together how best to collaborate. The way is different every time. Nevertheless, there are some reference points. Involve the target group as early as possible, for example, and discuss the purpose of participation. Also, think about how much influence the target group can exert and why people would be willing to invest time and energy in innovating together.'

DOES IT TAKE LONGER?
'Because you are dealing with different target groups each time, you have to find the best form and an appropriate collaboration. Researchers really have to come out of their ivory towers and all parties must be given a voice. That means taking the time to get to know and understand each other in the beginning. If you succeed in that, innovation takes off. As a researcher, you also have to adapt to what is feasible. Not every parent can attend a consultation in the middle of the day, for example. And if the target group invests time, you may offer them a financial contribution in return.'

CAN YOU WORK WITH ANY GROUP?
'Yes. But how depends on the target group.'

HOW?
'You can use different working methods to clarify a problem or to make an inventory of existing knowledge. Think of a dream workshop (outlining the ideal future), the knowledge arena (identify with parties of what you already know together), Digital Storytelling (outlining the situation by means of images and sound). In our experience at TNO, the possibilities are endless.

IS IT A TREND TO INVOLVE THE TARGET GROUP AND USE 'HANDS-ON' EXPERTS?
'A social movement of participation, empowerment, and engagement is definitely taking place now. I don't think this process will end. And as we develop interventions, there must be support and it is important to meet the needs of the target group.

TNO is increasingly focusing on innovation together with parents, youth, professionals, and organisations. In this way, you can research and develop interventions more intensively and on an equal level. That is why we are currently pooling our research knowledge with target group participation, so that we can learn from each other and others can learn from us.'

IS MAXIMUM PARTICIPATION ALWAYS THE GOAL?
'At the top of Pretty's "participation ladder" is self-mobilisation. One example is "citizen science", in which citizens set up and carry out all or part of a study. However, the highest form of participation is not always necessary. It just depends on what the goal of the study is.'

WHY DOES TNO CONSIDER TARGET GROUP PARTICIPATION IMPORTANT?
'TNO does innovative research with social impact. Dialogue and co-creation are always important in this. That is why we also want to let children think about what is needed. For example, a children's council has contributed to the strategy of TNO Child Health for innovations concerning the resilience of young people in the coming years. I am curious to see what focus points this will lead to for the future.

Moreover, it is great fun to do innovative research together on an equal level. Who wouldn't be happy to work with a group of enthusiastic people, each with their own knowledge and perspective, on improvements that are truly meaningful?'

CO-CREATION RESILIENCE

How do children participate? And which factors play a role in this? In this video we show that we have investigated this by observing, among other things, the Children's Council of JES Rijnland. It was striking that children have something to say and can advise about almost everything.

BOB THE HARE HELPS REFUGEE CHILDREN COPE WITH STRESS

With the BOB programme, children in South Sudan learn how to deal with feelings of stress. This is necessary, because little attention is paid to the psychological distress of young children in humanitarian services. TNO researcher Remy Vink: ‘Bob the hare helps children and their parent to self-care.’

In South Sudan, children between the ages of five and seven are considered too old to be allowed to hide behind their mothers’ skirts,’ says TNO researcher Remy Vink, ‘but too young to go to school (if available). They no longer sleep with their parents, but all together in a separate room. During the day they hang around, look after younger brothers or sisters, and sometimes get beaten up or chased away.’

Vink: ‘In the provision of humanitarian aid, little attention is paid to mental health, let alone in young children.’ That is why TNO and the NGO Help a Child (Stichting Red een Kind) developed the BOB programme for children of this age.

At the start of this programme, children make their own cuddly toy from materials that are available locally – reeds, threads, pieces of cloth. That is what the letters BOB stand for: Build your Own Buddy.

SCARY SITUATIONS

In 12 group sessions led by two facilitators, the children connect with Bob the hare and his adventures from the corresponding booklet, drawn by a local artist. The facilitators are trained lay community counsellors, living the same villages as the beneficiaries.

In the story, Bob the hare encounters scary and stressful situations. The children learn how to cope with their feelings and bodily reactions to scary situations, through emotion

regulation exercises during the group sessions, with the self-made buddy at their side. Parallel to the sessions for children, sessions with parents take place to learn how they can comfort and help their child and deal with their own emotions as a consequence of psychotrauma and ongoing deprivation.

STRATEGIES IN CASE OF STRESS

The goal of the programme is for children to recognise their emotions, to communicate about this, and to manage their stress levels. Through exercises based on the experiences of Bob the hare, they learn six strategies for coping with feelings of stress.

For example, each session starts with the ritual of 'Waking up the animals': they do exercises that resemble postures of certain animals. At the end of the session, after Bob's adventures, the animals go to sleep again.

SELF-CARE

Although many children are traumatised the 'specific unpleasant events experienced by the children are not discussed; Build your own buddy is a mental health and social support programme (MHPSS). It is an accessible and fun way to learn to self-care and to strengthen the bond between the often traumatised parents and their children,' says researcher Remy Vink.

'The idea is that you can always start learning to cope with psychological stress, that neurobiological processes in the body play a role, and that body and mind can become more balanced. These are typical contemporary scientific views on trauma.' And the methods of experience through exercise and storytelling suits the age of the children and is in line with the African culture of storytelling.

DEVELOPMENT DURING CORONA

Setting up the programme, developing the book and materials, training the local staff of three communities in South Sudan – it all had to be done online because of the corona pandemic. 'It all turned out to be perfectly possible via the computer screen,' says Vink.

IMPROVED WELL-BEING

'The BOB programme was implemented, monitored and evaluated in four communities with almost 400 children in South Sudan. The impact on children, parents, and communities as a whole was absolutely overwhelming'. Pre- and post-measurements with the Strengths and Difficulties Questionnaire (SDQ) and other research instruments underpin this.' One mother said 'a shelter may fall down, crops can fail, but emotional strength stays with you your whole life'.

The BOB programme is implemented further in South Sudan and other countries in Africa by Help a Child. Because of its success, Vink hopes to introduce BOB in more countries. 'When the programme is used in several places, we can study in more detail what the effect of the programme is in other settings and, for example, compare this with a control group who has not followed the programme yet'.

LEBANON

The BOB program is currently adapted to Arab speaking cultures and at the same time turned into a self-guided modular digital programme for refugee education centres in Lebanon. This is done together with the NGO Thaki.

BACK TO THE NETHERLANDS

After the positive response from South Sudan, the idea arose to see what the BOB programme could mean in the Netherlands. 'In the Netherlands too, the options for 5 to 7-year-olds is limited. It is likely that children in asylum centres or children of for example chronically ill parents, benefit from this. In this way, the knowledge and experience we gain overseas comes back to the Netherlands.'

READ MORE
Read more about BOB

FROM **STRESS** TO **SUPPORT** WITH **THE DIVORCE ATLAS**

Separating parents are going through an uncertain and emotionally intense period. The ‘ScheidingsATLAS’ (‘DivorceATLAS’) is a supportive and practical training focusing on post-separation parenting and parenthood. TNO researcher Mariska Klein Velderman: ‘The programme helps to find a new balance.’

The DivorceATLAS is a method developed by TNO for separated parents or parents going through the process of union dissolution. There are two variants: a **group version** in which parents meet for 2 3-hour sessions, and an **online version** of 6 hours in total, which parents can do the e-Health training by themselves at their own pace.

‘After participating in the online and group training, parents feel more supported. More than 2 out of 5 parents report that it gives them self-confidence and more than half get new ideas for coping with the situation,’ says TNO researcher Mariska Klein Velderman, who co-developed the programme.

‘They exchange stories from their experiences, notice that other people have certain reactions or feelings as well, and receive information about, for example, communicating positively with their child or ex-partner.’ Parents participate without their ex-partner so that they can focus on their side of parenthood.

IMPACT OF DIVORCE

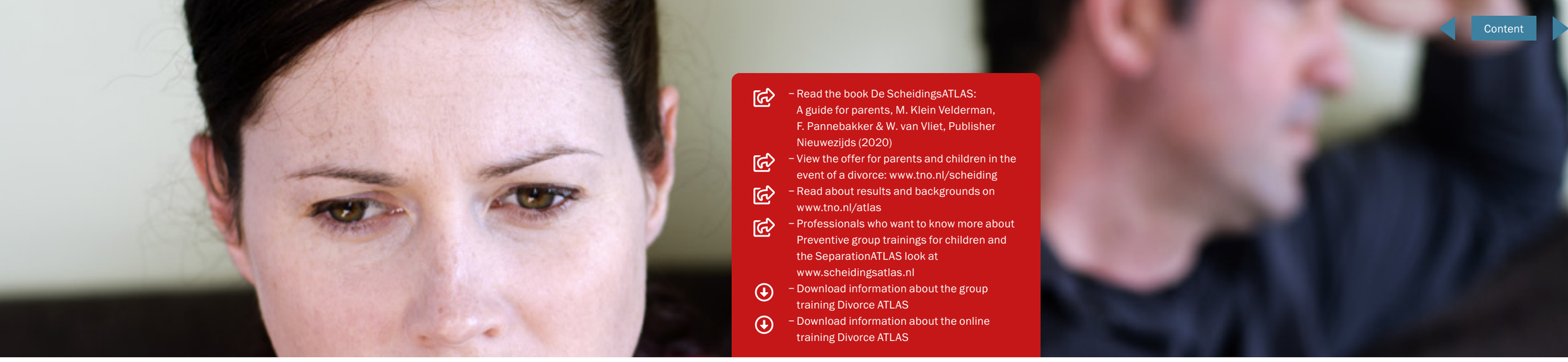
In the Netherlands, around 35,000 marriages end in divorce every year and around 60,000 cohabiting couples separate. As many as 86,000 children are involved.

Divorcing parents end their relation together, but have a common past and future as parents. They have to adapt their lives, which raises practical and parenting questions, but also leads to feelings of grief and mourning. The DivorceATLAS helps to cope with this. Klein Velderman: ‘The DivorceATLAS is not therapy, but it makes parents aware of the consequences and impact of divorce on parents and children.’

‘They also receive tips and practical information on what they can do in their role as parent, in contact with the ex-partner or at times when things are not going so well. This helps to strengthen their parenting skills, despite the emotionally intense period they are going through.’

DEVELOPMENT

Earlier, TNO took the initiative to develop group programmes for children of separatee parents. For over a decade now, children have been able to follow the certified and evidence-based programmes ‘Stoere Schildpadden’ (Dutch for Tough Turtles) for preschoolers and ‘Dappere Dino’s’ (Dutch for ‘courageous dinosaurs’) for 6-8 year olds.



- Read the book De ScheidingsATLAS: A guide for parents, M. Klein Velderman, F. Pannebakker & W. van Vliet, Publisher Nieuwezijds (2020)
- View the offer for parents and children in the event of a divorce: www.tno.nl/scheiding
- Read about results and backgrounds on www.tno.nl/atlas
- Professionals who want to know more about Preventive group trainings for children and the SeparationATLAS look at www.scheidingsatlas.nl
- Download information about the group training Divorce ATLAS
- Download information about the online training Divorce ATLAS

Klein Velderman also co-developed these programmes: 'In these preventive group trainings for children, there is also a meeting with parents, which is not compulsory, but highly valued. We were often asked if there was also a specific parent training.'

'From 2018 onwards, we have been thinking with parents and professionals about what such a parent training programme could look like: what do divorcing parents need, what helps them and their children?'

'We also got inspired from America, where it is more common for parents who are separating to be offered an educational programme (for example, with ACT, Assisting Children through Transitions).'

NO INTERVENTION

Klein Velderman: 'In The Netherlands, there are several interventions for parents facing divorce, such as Ouderschap na Scheiding (Parenting after Divorce), Ouderschap blijft (Parenting Remains), and Kinderen uit de Knel (Children away from the conflict). These are intensive interventions, for situations with more interparental conflict or complexity. A preventive, accessible, short training course with practical information on "renewed parenthood after separation" was lacking.'

FOR EVERYONE?

'Yes,' agrees Klein Velderman wholeheartedly. 'The training courses are suitable for both problematic and smooth-running divorces, for young and old, regardless of educational level, cultural background, or number of children. It is through contact that you learn from each other.'

EFFECTIVE

TNO also studied the efficacy of the DivorceATLAS in 2019. Specifically, the study focused on its impact on the emotional well-being of the parent, the parent-child relationship, and parenting.

'It is known that parents experience more stress and a lack of support during a divorce and that they experience less wellbeing. As a result, parents can display less monitoring behaviours and less sensitive responsiveness,' says Klein Velderman.

'After participation in the DivorceATLAS, parents feel supported in their search for a new balance between time and attention for the child and for themselves,' concludes the TNO researcher. 'Parents have been given practical tools and information with regard to post-separation parenting, parenthood, and communicating with the ex-partner as a co-parent, they say. They would recommend the training to other parents.'

Professionals are also happy with the programme. 'They say: "Finally, a method where everything is brought together – loss, grief, communication, and parenthood after divorce."

WANT TO GET STARTED TOO?

The DivorceATLAS is offered through various organisations in the Netherlands; parents get information about it by local/social teams, so-called divorce desks, their family doctor, schools, Centres for Youth and Family, but also through legal advisors.

The Child and Divorce Knowledge Centre (Kenniscentrum Kind en Scheiding) in Haaglanden and TNO are accredited to train new trainers together.

THE FUTURE

'Divorce is a major life event for all involved,' says the researcher. 'I am pleased that TNO has been investing in children's and parenting programmes such as 'Stoere Schildpadden', 'Dappere Dino's', and the DivorceATLAS for many years. And that we are now seeing that there is more attention for divorce and its effects.'

Klein Velderman is not yet done with the subject of divorce and separation. 'So many parents and children are faced with it nowadays. I would like to see new social workers learning about the impact of divorce during their training. And that they know how to offer accessible support.'

Read the book De Scheidingsatlas, M. Klein Velderman, F. Pannebakker & W. van Vliet, Uitgeverij Nieuwezijds (2020)
Take a look at information for parents and children going through divorce: www.tno.nl/scheiding
Read about results and backgrounds at www.tno.nl/atlas
Professionals who want to know more about 'Stoere Schildpadden' and 'Dappere Dino's' programmes, and the DivorceATLAS can visit www.scheidingsatlas.nl

PSYCAT:

A SMART AND RELIABLE TOOL TO DETECT PSYCHOSOCIAL PROBLEMS IN CHILDREN

Psycat is a smart online tool for the identification of psychosocial problems in children. The Psycat is a good alternative for currently used screening questionnaires. The Psycat uses an adaptive method and psychosocial problems are measured accurately and efficiently. Moreover, Psycat provides reliable information on the nature of the problem.

Many children suffer from psychosocial problems, such as social-emotional and behavioural problems. Children with psychosocial problems are likely to experience difficulties in their daily functioning. Early identification of these problems in children is therefore important. Validated questionnaires may improve this identification. That is why we have developed a smart online method, Psycat, to achieve optimal results with as few questions as possible.

WHAT IS PSYCAT?

Psycat is an online parent questionnaire to detect psychosocial problems in children (internalising problems, externalising problems, hyperactivity, and total). Psycat uses computerised adaptive testing (CAT). This technique is used to estimate the severity of any problems after each given answer. The next step is to assess which follow-up question can improve the estimation. Thereby irrelevant questions can be skipped. There is a Psycat version for parents of two to four-year-olds and one for seven to twelve-year-olds.

ADVANTAGES OF PSYCAT

Psycat is an alternative for currently used tools for identifying psychosocial problems in children, such as the Strengths and Difficulties Questionnaire (SDQ). Compared to currently used questionnaires (such as the SDQ), Psycat offers the following advantages:
Psycat is a short adaptive tool, irrelevant questions are not asked, requiring a mean number of 17 items.
Psycat not only provides reliable information on whether problems exist, but also provides information on the nature of the problems (internalising, externalising, hyperactivity problems).

The results are presented in an easy to read graphic.

NEXT STEPS

Research shows that Psycat is a reliable and valid instrument. Because the scientific development of Psycat has been completed, it is now a good opportunity for a commercial company specialised in screening instruments to continue the activities. It is thereby important that Psycat will be embedded in the daily practice. TNO will be involved in these activities.

Download the fact sheet

IMPROVING THE SOCIAL DOMAIN WITH **LEARNING NETWORKS**

WHAT IS IT?

Those involved in the social domain are faced with complex societal challenges, such as integrated working and increasing equality of opportunity. Learning networks are ideally suited for tackling these challenges. In a learning network, you approach the complexity of the issue with the expertise of for instance (health) care organisations, municipalities, knowledge institutes, educators, and the families themselves.

Moreover, learning networks support the informal learning of professionals. In this way, learning networks give an impulse to professional development in the social domain, which is on the social and political agenda as lifelong learning in the 'Working + Innovating + Learning' triangle (Ten Have, 2015). For guidance on how to set up a learning network and what to pay attention to when organising a learning network, TNO together with Leiden University of Applied Sciences developed the framework *Improving the social domain together in learning networks*.

WANT TO KNOW MORE?

FACT SHEET

In this fact sheet, we introduce the framework *Improving the care for youth together in Learning Networks,* specifically developed for setting up, maintaining, and institutionalising cross-organisational learning networks.

MORE INFORMATION

The framework can be found on the website of Werkplaats SAMEN – Leren & Implementeren (Collaboration TOGETHER - Learning & Implementing). Here, we also share developments regarding the framework. Or subscribe to SAMEN's newsletter.

IMPROVING THE SOCIAL DOMAIN WITH LEARNING NETWORKS BUILDING FRAMEWORK AND FURTHER DEVELOPMENT

In this video of about 2,5 minutes, Noortje Pannebakker, expert in learning structures and implementation, explains more about how the framework is set up and how it will be further developed in the coming years.

Click here for the video

WHAT WORKS IN **SOCIAL SKILLS TRAINING**

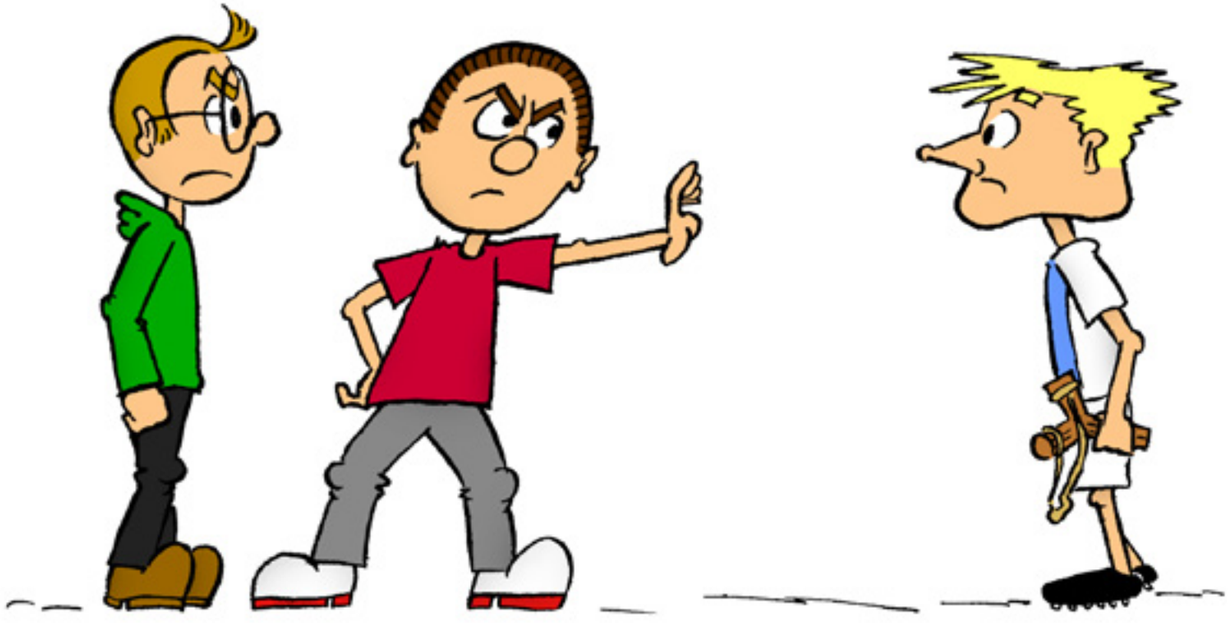
Within the consortium “Social Skills” – part of ZonMw’s programme “Effectiveness of working in the Youth Sector – project leader Minne Fekkes and Youth Care organisations researched the core elements in courses aimed at increasing social skills of young people. With this research they contribute to increase the knowledge about which interventions work best for whom and when.

The research on the essential elements in social skills training began with a meta-analysis of 60 international resilience programmes for children. Subsequently, the results were translated into microtrials in which the effectiveness was tested in training sessions conducted by Renske van Hoeve of Centrum 1622.

This gave insight that several techniques that are used in social skills training programmes have different positive effects. In this interview with Minne Fekkes, conducted on behalf of ZonMw, he and trainer Renske van Hoeve of Centrum 1622 talk about these and other findings.

Read the entire interview with Minne Fekkes and Renske van Hoeve on the ZonMw website

PRIMA APPROACH TO **PREVENT BULLYING** IN SCHOOL



What is truly successful about the PRIMA anti-bullying programme in primary schools? And when does such a programme work best? TNO researcher Minne Fekkes, who is also an endowed professor of social skills and resilience at the University of Amsterdam, studied the effects of anti-bullying programs together with schools. Fekkes: ‘To reduce bullying, you must not only focus on the behaviour of children, but also strengthen the teachers”

ONCE UPON A TIME... THERE WAS NO BULLYING POLICY

‘Whether bullying occurs at school wasn’t studied in the Netherlands until the 1990s. Subsequently, dozens of anti-bullying programmes were developed. In 2014, it was shown that most of them could not be proven to be effective against bullying at school. And yet 1 in 8 primary school children is being bullied! Furthermore, bullying is associated with psychosomatic and psychosocial health problems.’

THEN, FORTUNATELY, WE GAINED AN INSIGHT OF BULLYING...

‘Previously, the focus had been on making bullied children more resilient and teaching bullies social behaviour. We now know that bullying is a group problem. It is important to teach followers not to participate, to support defenders of bullied children in their positive behaviour, and to activate outsiders to disapprove of bullying behaviour.’

... AND WE CREATED A FIRST VERSION OF PRIMA,

‘All these insights were incorporated in the first version of the PRIMA anti-bullying programme. PRIMA originally consisted of 3 components. Teachers followed a 2-day training in teaching PRIMA, children filled in the Bullying monitor so that teachers know whether there is bullying in the classroom, and children received 8 lessons in the upper years

BUT TEACHERS CRITICISED PRIMA...

‘Primary schools found the 2 training days for teachers too time-consuming. Furthermore, the Bullying monitor that children filled in was anonymous. But teachers wanted to know who is being bullied, who is bullying or who is at risk of being bullied. In addition, the education system wanted not only an upper-years programme, but a programme throughout primary school to promote pro-social behaviour.’

... SO FEKKES OF TNO STUDIED WHAT COULD BE DONE DIFFERENTLY...

'Together, TNO and Amsterdam University of Applied Sciences studied in literature whether children dare to be more honest if they fill in the Bullying Monitor anonymously. But it was found that children have no problem with the teacher knowing who is filling in the Monitor, provided that the teacher keeps the information confidential.
In addition, we developed a series of lessons starting in year 1 and continuing through year 8. Each school year starts with 6 lessons to positively influence group formation and after the Christmas holidays they are given 2 more to refresh their knowledge and skills.'

... ADDED A COMPONENT...

'Teachers say they find it difficult to react to bullying situations. So we added a protocol for action, in which they can look up how to talk to the parents of a child who is bullying and what steps to take in difficult situations.'

... RESEARCHED EXACTLY WHICH PART REDUCES BULLYING...

The current 5 components (the series of lessons, the Bullying Monitor, teacher training, an e-learning module for teachers, and the protocol) were developed, tested and examined for their effectiveness in collaboration with the schools. The new PRIMA curriculum is therefore practice and science based.
Several effect studies show that a quarter fewer children are bullied after one year use of the program.

But we also wanted to know which component contributes most to less bullying at school. Our recent research shows that bullying decreases most in schools where more components of PRIMA are implemented. In other words, the more time you spend on anti-bullying policy, the less bullying there is.'

... WHETHER YOU SHOULD FOCUS YOUR ENERGY ON THE TEACHER OR THE STUDENT...

'Surprisingly, the majority of bullying is reduced because of what the teacher does. In a best-case scenario, they follow the e-learning, the training days, and the protocol. To reduce bullying, it is not only the behaviour of children that matters, but also how much a teacher knows and is aware of bullying. Probably because they make it their business to pay attention to group dynamics every day. In addition, it is important to reinforce children's positive behaviour.'

... AND WHY SCHOOLS DON'T IMPLEMENT THE WHOLE PROGRAMME

'Now the question is: why doesn't every school implement all the components? Is it a time limitation, is the programme still too extensive, does it matter if management promotes the importance of PRIMA and makes sure there is enough time for it? We are going to do follow-up research on this in the near future.

NOW THE QUESTION IS: WHAT WORKS FOR WHOM!

'Once we know the answers and can improve the programme further, I would like to zoom in on the question: which child benefits most from an anti-bullying programme at school?

Children with certain characteristics are at greater risk of bullying and being bullied. I know from previous research, for example, that anxious and depressed children are more likely to be bullied. Children who experience domestic violence are also more likely to bully or be bullied. Children who cannot control their emotions are more likely to show bullying behaviour.

The strategies that children learn through the anti-bullying programme don't distinguish between individuals. I would find it interesting to study what works for whom to reduce bullying.'

“CHEERS!”

REDUCTION OF ALCOHOL CONSUMPTION WITH AN APP

You can say that alcohol is unhealthy, yet the majority of students drink too much. And it is even more difficult to motivate secondary vocational students to reduce their alcohol consumption. TNO researcher and behavioural expert Hilde van Keulen discovered what does work with secondary vocational students who drink excessively.

ENJOYING A DRINK...

Two thirds of young adults drink more than the recommended amount. And that is based on the old, broader guidelines from 2006. Now, the maximum recommended amount is set at a maximum of 1 glass a day for men and women. Apart from binge drinking, which some young people do. Binge drinking means drinking 5 or more alcoholic beverages at a single occasion.

DRINK LESS!

‘Effective behavioural interventions to reduce alcohol use are hardly available for students in higher vocational education or at university, and even less so for students in secondary vocational education.’

WHY SHOULD I?

‘In addition to being unhealthy, excessive alcohol consumption is also linked to poorer academic performance and higher school drop-out rates.’

IT REALLY IS BETTER

‘The majority of secondary vocational students (16-24 years) are not at all motivated to drink less. So TNO, the Trimbos Institute, Radboud University Nijmegen, in collaboration with teachers and young people from the Deltion College in Zwolle and the Nova College in Haarlem co-developed the “What do you drink” app, financed by ZonMw’.

BORING!

‘During my conversations with secondary vocational students, I noticed that motivating students to drink less alcohol would be quite a challenge. They indicated willingness to receive support and that they can be challenged to drink less, but it should certainly not feel like therapy. And they had the desire to make their own choices.
In collaboration with students, we came up with an personally tailored, adaptive app that provides feedback, motivational messages and exercises tailored to the extent to which a particular user is successful in attaining a self-set alcohol reduction goals, and depending on their reported mood, motivation and self-confidence. The timing, type, and amount of support depends on daily diary data gathered by means of the app.’

WRITE IT DOWN...

Every day the young person receives a reminder to fill in the diary. In half a minute, they indicate how much they drank yesterday, how they feel, how motivated they are, and how confident they are in achieving their goal for the day. Because achieving your goal – to drink less – can be more difficult when your mood, your motivation, and your self-confidence are low. So, for example, depending on his or her diary results a student is provided with 2 exercises that are tailored to whether a barrier to achieve a drinking goal is related to mood, self-confidence or motivation. One exercise, for example, is to recognise tempting situations and to deal with them anyway. For example, when you go out with friends. Another exercise is to get a buddy to tell you that you want to drink less and ask them to help you.'

AS IF THAT HELPS

'The app user is also shown videos in which other young people explain how much they drink, why they drink, what they do to drink less, and how they resist temptations. If an app users reaches particular goals they are reinforced to continue and provided with compliments.
And as a matter of fact, the videos were made by students of the Nova College as part of a study assignment.'

WELL, 6,000 YOUNG PEOPLE TRIED IT...

'After developing the app, I studied whether the intervention was effective. We recruited 6,000 young people who drank excessively, via school and online media like Facebook and Instagram. The control group was asked a question about drinking, mood, motivation, and self-confidence for one week every 6 weeks.
The intervention group in addition to those questions received weekly personal feedback during 6 weeks. Then the feedback were slowly reduced to every other week, then every other month, and after 4 months the intervention stopped. Two months later, the research ended.'

AND, DO THEY DRINK LESS?

'All of the young people drank less. Even those who only filled in diaries and did not receive a the intervention programme. On average, they drank 1.5 glasses less per week. Apparently, self-monitoring is an effective strategy if you want to reduce your alcohol consumption'.

THROUGH AWARENESS.

'Self-monitoring helps to raise awareness of alcohol consumption. By keeping track of it frequently, young people see that they drink more than they thought. And they find that it is quite possible to reduce it. Young people who received the intervention were more motivated and more self-confident to drink less than those who only received diaries. That effect remained even 6 months after the start of the intervention.'

MUST BE A HASSLE, THAT APP?

'Young people find the intervention easy to use, clear, and useful. They appreciate the freedom of choice in the programme. It is available in the Appstore or PlayStore and can be found on the Trimbos Institute website.'

YOU HAVE TO PERSEVERE...

'During our research, we unfortunately had a lot of participants that dropped-out. Not a surprise; This is common in online interventions. A blended approach in which we would combine the online intervention with a face-to-face counselling or teaching programme could lower the drop-out rates, as we now know from other research. And in addition, this could also be beneficial in terms of effectiveness.'

YEAH, DUH!

'It is good to know that you can reach so many young people through social media like Instagram and Facebook. We're going to use that more often! I am also proud that we were able to design such a beautiful intervention in collaboration with students, with their highly rated videos.'

... AND BE ABLE TO CHOOSE

'Keeping track of what you drink and how you feel seems to help you consume less alcohol. Offering young people personal feedback and exercises in addition to this is a good first step towards stimulating them to change their behaviour.'

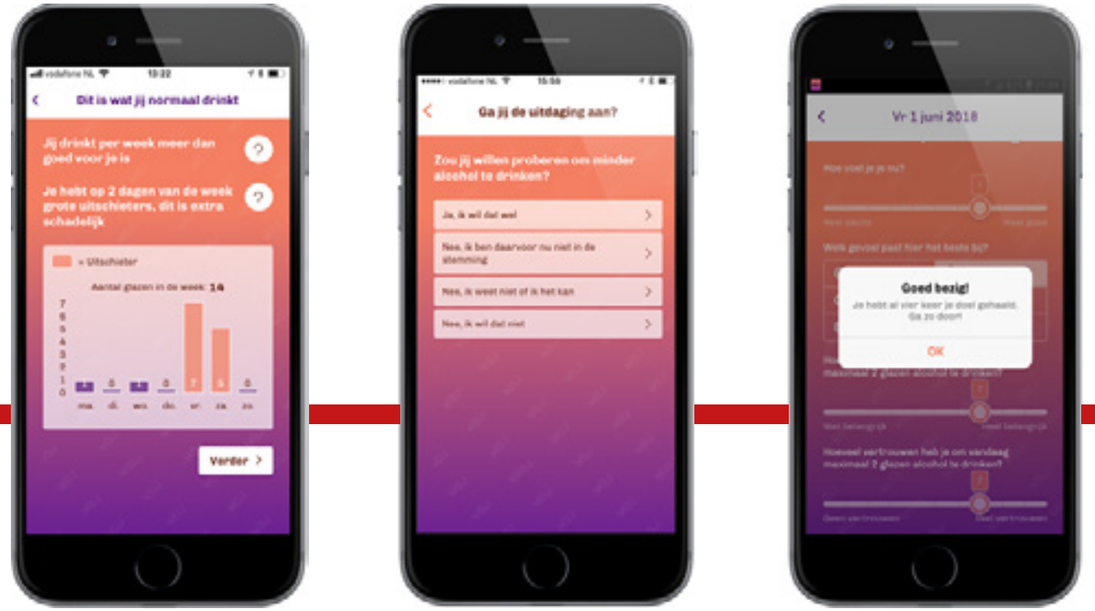
OKAY, NEXT!

'The study was just completed and will be published soon. You can already read the final report and the publication on the design of the application. As the owner of the intervention, the Trimbos Institute wants to bring it to the attention of professionals and embed it in existing programmes, such as the 'Helder op School' (Sober at School) training programme.

In follow-up research, I would like to examine where and when young people drink more, using sensor data, for example. And then send them motivational messages to support them.'

The publication *What Do You Drink (WDYD): Effects, usability, and acceptability of a dynamically tailored mobile intervention to reduce excessive drinking among at-risk young adults* by H. van Keulen, M. Kleinjan, C. Voogt, A. Huizing, R. Andree, T. Paulussen & P. Van Empelen will soon be available online.

van Keulen H, Voogt C, Kleinjan M, Kramer J, Andree R, van Empelen P
The development of a dynamically tailored mHealth alcohol intervention entitled 'What Do You Drink' to reduce excessive drinking among Dutch lower educated (MBO) students aged 16 to 24 years: An Intervention Mapping approach
JMIR Form Res 2022, accepted for publication



DIGITISATION

Technology in preventive youth health care: Personalisation of care and parent empowerment

Preventive youth health care where and when parents and children need it

Increasing parental involvement in child development with Van Wiechen videos

The use of digital innovations contributes to more flexible care. That is why TNO develops integrated digital innovations for collaboration between parents and professionals in Youth Health Care.

TECHNOLOGY IN PREVENTIVE YOUTH HEALTH CARE: **PERSONALISATION OF CARE AND PARENT EMPOWERMENT**

How can we utilize parents' perception of their child in the daily setting in combination with Preventive Youth Health Care's expertise of health and development? In such a way that a child gets the right care in time? TNO's Olivier Blanson Henkemans contributes to the quality and accessibility of Preventive Youth Health Care through co-creation of digital innovations.

WHAT OPPORTUNITIES DOES DIGITAL INNOVATION OFFER?

'With digital innovations, both professionals in Preventive Youth Health Care – the doctor, nurse or doctor's assistant – and parents monitor the child's growth and development. For example, data on height, weight, and motor and cognitive developments. The computer system can automatically make observations and provides evidence-based advice to achieve (even) better care for the child.'

DOESN'T THIS MAKE PARENTS ANXIOUS?

'It usually works the other way round: parents can see that their child growth and development are not lagging behind those of its peers. And if they do have concerns and the digital system confirms that it looks a bit different, parents can contact Preventive Youth Health Care directly. They don't have to wait to be invited for a consultation. In this way, care is personalised and parents are more empowered to contribute to their child's development.'

AND WHAT DO DIGITAL INNOVATIONS MEAN FOR PROFESSIONALS?

'The data they already collect are better utilised, which makes their work more efficient and effective. If the algorithm "thinks along" in the background, this prevents missed signals or unnecessary referrals. And it saves professionals time: they don't have to go through all the guidelines when in doubt. Moreover, professionals receive immediate feedback when they enter data: so they themselves benefit from data registration.'

HOW DO THE INNOVATIONS CONTRIBUTE TO THE ACCESSIBILITY OF PREVENTIVE YOUTH HEALTH CARE, INCLUDING DURING CORONA?

'In the beginning of the corona crisis, schools were closed and appointments at the Well Baby clinic were cancelled or shortened to avoid contact between parents. Digital innovations made it possible to monitor children's development remotely. In addition, it aided to prevent a proliferation of problems at a later stage – children with possible developmental problems were filtered out using the digital options.

Furthermore, digital innovations provide more flexible options for requesting and providing care. This results in empowerment of parents, personalised care, more accessible care, and the feeling of having more control as a parent. TNO's innovations connect with the I-JGZ Health Deal to stimulate the introduction of digital innovations on a national scale among parties such as TNO and NCJ (Nederlands Centrum Jeugd: Netherlands Youth Centre), professional organisations, IT suppliers, Health Care organisations, and parents.

HOW DID TNO DEVELOP THESE INNOVATIONS?

'Through co-creation. Step by step, together with parents, professionals, and stakeholders, we looked at what is missing, what could be easier, and what is needed. Each time, we developed prototypes and consulted with partners to see if they could benefit from it. The Do-it-yourself Van Wiechen study and the Smart Guideline Module were for example developed for personalised advice to parents and support for professionals in making decisions about care.
The prototype was evaluated positively and we are now working on implementing it nationwide.'

1. THE 'DO IT YOURSELF VAN WIECHEN STUDY'

THE GOAL?

Parental empowerment, parental control

WHAT IS IT?

Parents of 0 to 4-year-olds, watch short videos of cognitive, social, and motor development milestones. By watching these films, they can discover what children can do on average at a certain age, such as rolling over or building with blocks. Next parents can compare these developmental milestones with their own child's development. They can register their findings via an online questionnaire, soon to be available in the GroeiGidsApp (Growth Guide app).

The videos are based on the Van Wiechen research in which the professional at the Well Baby clinic checks a list of 75 characteristics to see how a child is developing.

ADDED VALUE

If appointments at the Well Baby clinic have to be cancelled or shortened to avoid contact between parents (such as during corona), this technology offers the opportunity to chart development nevertheless.

2. SMART GUIDELINE MODULE

THE GOAL?

Early detection, effective care, personalised care

WHAT IS IT?

Guidelines are an important basis for the care provision by professionals in Preventive Youth Health Care. However, for professionals, it is a challenge to use these guidelines as intended. There are more than 30 guidelines, which are regularly updated.
It is challenging to have all of these ready and to keep them up to date. The Smart Guideline Module can aid use guidelines. It is a so-called clinical decision support system, which contains algorithms based on guidelines from the Preventive Youth Health Care, for diagnosis and advice. It is data-driven and used through the digital dossier of the Preventive Youth Health Care.
It is also through the GroeiGids app by parents.
In this case, parents receive personalised advice (non-medical) on the growth and development of their child. Based on data in their app. And if there are concerns, they receive referral to their own Preventive Youth Health Care. The Smart Guideline Module makes care more flexible and contributes to parental empowerment.'

ADDED VALUE

Because the guidelines are consulted automatically – the system quickly goes through the decision trees based on the data in the digital dossier – it takes less time for the professional. Furthermore, as a professional, you are less likely to overlook a guideline. Finally, the use of the Smart Guideline Module increases the willingness of professionals to enter data into the digital file properly, because the importance is clear.

3. I-JGZ: SERVICES THROUGH THE COMBINATION OF DATA

THE GOAL?

Reliable and safe data management, control by parents and professionals, personalised care

WHAT IS IT?

Preventive Youth Health Care professionals and parents keep track of data about children in various files, apps, and portals. Because Preventive Youth Health Care organisations are free in their choice of systems to use, this leads to fragmentation: various e-Health services are used and data are stored in different locations.
Ideally, you would like to combine data form Preventive Youth Health Care and parents to get the most complete picture possible about the growth and development of the child. It is even more convenient if you can analyse the data quickly with the help of digital services, such as the Smart Guideline Module.
Therefore, TNO researches on how to keep data safe in its place, but to be able to exchange it with other data about a child via a service. For example, through a personal health train.

ADDED VALUE

With the personal health train, you can send digital services to the data. It is like sending a train carriage with a digital data analysis tool past various data 'stations' (the parent app or the digital dossier) with data about a particular child.
The advantage: the data remains in the same place, does not change, and therefore remains reliable and secure in terms of privacy. At the end of the journey, the Smart Guideline Module can, for example, give advice about care based on the journey past the available, fragmented data. The owners of the data determine which train carriage may stop where and whether the data may be retrieved from a particular station. This allows everyone to remain in control of their own data.

PREVENTIVE **YOUTH HEALTH CARE** WHERE AND WHEN **PARENTS AND CHILDREN** NEED IT

Improved response to what parents and children need - when and where needed. Using experts when it is truly necessary. Preventive Youth Health Care wants to work in a more flexible and accessible way. Head of a Preventive Youth Health Care institute Janine Bezem, who also works at TNO, studied how to implement this.

FLEXIBLE DEPLOYMENT OF PROFESSIONALS

When visiting Preventive Youth Health Care, should every child be seen by the paediatrician or paediatric nurse? Not as far as Janine Bezem is concerned. She is head of the Municipal Health Service Gelderland-Midden, a researcher at TNO, and was previously a paediatrician. ‘The doctor’s assistant can screen and identify needs just fine,’ she notes. ‘This saves time for paediatricians and paediatric nurses and reduces costs.’

NOT A PAEDIATRICIAN BUT A DOCTOR'S ASSISTANT

In her thesis, Bezem found that doctor’s assistants can screen children aged 5-6 years and 10-11 years very successfully for obesity, visual or psychosocial problems. If necessary, they refer to paediatricians and paediatric nurses after triage. This method leads to significant savings: for 100,000 children aged 5-6 years, this way of working costs €5.2 million compared to €7.6 million with the traditional method.

SHORTAGE OF DOCTORS

In 2017 and 2018, a study was conducted on the effect of flexible deployment of doctor’s assistants on the additional care the Preventive Youth Health Care offers. And effect on the deployment of various disciplines. ‘We have a shortage of paediatricians and an increasing shortage of paediatric nurses. Deployment of doctor’s assistants can aid solving these shortages. It generates time and financial scope to see children who require a little more care.

RIGHT TO PREVENTIVE YOUTH HEALTH CARE

‘Of course, we have a protocol for the doctor’s assistants to determine when a follow-up examination by the paediatrician or a visit to the paediatric nurse is necessary. The paediatrician wants to see a child if, for example, a heart defect or hearing impairment is diagnosed; the paediatric nurse can help if there are questions concerning lifestyle and parenting. Because every child has a right to Preventive Youth Health Care’, says Bezem, ‘but not to the same Preventive Youth Health Care.’

ONLINE APPOINTMENT AT THE TIME OF YOUR CHOOSING

A letter inviting you to visit us at a time not of your choosing. That is how parents have traditionally been asked to visit the Well Baby clinic. This can be done more flexibly, thought Janine Bezem, who works for Municipal Health Service Gelderland-Midden and is a researcher at TNO.

CORONA AS A NECESSITY

The corona pandemic turned this wish into a necessity. 'Because of corona, parents were no longer allowed to bring their children to the Well Baby clinic and home visits were limited or not permitted,' she says. So, as head of a Preventive Youth Health Care institution, Bezem experimented with online contact: via chat and video call. 'The advantage over telephoning is that you can see each other.'

DIARY

The offer to do it this way remained even when corona measures were relaxed. 'Parents like the fact that they don't always have to come in and can video call or chat with a professional during a break at work. In this way, a consultation or just asking a question fits more easily into the diary.'

FASTER

The corona outbreak accelerated the development of the 'GroeiGids-App' (Growth Guide app), in which more than 10 of the 44 Preventive Youth Health Care organisations in the Netherlands are participating. 'It allows parents of children up to 4 years of age to chat with nurses, among other things. At the Municipal Health Service Gelderland-Midden, no fewer than 10 nurses have been trained to chat with parents.'

KNOWLEDGE

Bezem: 'A success. We are able to reach many parents and are now expanding to evenings and weekends. In the meantime, we are gathering knowledge about when parents prefer to chat, what information they need, and whether we should develop new materials to help them even more.'

CHATTING FOR TEENAGERS

You are 12 years old and have a question. Or you want to share your worries. Chatting with someone online via your mobile phone or computer is a step that young people of that age can take easily or more easily. For years, young people have been able to chat with Preventive Youth Health Care staff through jouwggd.nl; since the corona virus, many more young people have been taking advantage of this option.

SUCCESS

TNO researcher Janine Bezem: 'I also expect an increase in parenting questions and psychosocial problems among young people in the post-corona period – so it is good that this makes us more accessible. Even when corona no longer prevents physical visits, we will therefore continue to offer this online option and the Growth Guide app for parents.

PARENTS BACK TO PREVENTIVE YOUTH HEALTH CARE ONLINE

Janine Bezem would like to increase the online options for parents, especially for the parents of children between the ages of 4 and 12. The TNO researcher also works as head of Municipal Health Service Gelderland-Midden four days a week and notes: 'Parents of primary school children often consult other websites, and Preventive Youth Health Care loses track of them a little. We can change that by creating better digital options.'

24/7

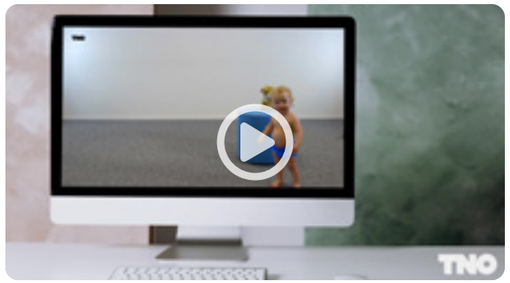
'Parents don't always want to call or visit, they want professional help, preferably 24/7, and not just when it's their turn.' Ideally, parents could ask questions and record their children's developmental milestones in an app or parent portal. This will allow both them and Preventive Youth Health Care to keep an eye on the growth and development of children. Preventive Youth Health Care would like to create a file that can be viewed by parents.

DIGITAL INNOVATION

That is why Bezem is linking up with I-JGZ (I-Preventive Youth Health Care). I-JGZ is a programme of TNO and NCJ (Netherlands Youth Centre) with professional organisations, IT suppliers, Health Care organisations, and parents to develop integrated digital innovations.

INCREASING PARENTAL INVOLVEMENT IN CHILD DEVELOPMENT WITH VAN WIECHEN VIDEOS

In this video of 1,5 minutes, project manager Yvonne Schönbeck tells about the Van Wiechen videos for parents that she worked on. With the help of these short videos, parents themselves can look at developmental milestones of their child, for example in preparation for an appointment with Youth Health Care. This innovation has been accelerated by corona.
Do you have any questions after seeing this video or would you like to know more? Then please visit www.tno.nl/vanwiechenfilmpjes or contact Yvonne Schönbeck: yvonne.schonbeck@tno.nl.



CORONA AND YOUTH

Corona

Programme for Public Health Medical Specialists in Training – Blended Learning

Tip sheet ‘Corona virus: Tips for being home with your family’

‘Learning new behaviour and maintaining it is difficult’

Preventive Youth Health Care is also faced with challenges due to the coronavirus. As a applied research institute, TNO is committed to, also within Preventive Youth Health Care, contribute to the combat against the effects of the coronavirus.

PROGRAMME FOR PUBLIC HEALTH MEDICAL SPECIALISTS IN TRAINING **BLENDED LEARNING**

TNO is a recognised training institute for the education of Youth Health Care physicians. Despite the corona restrictions we continued educating the professionals . Sandra Hamming explains how we did this in a 2-minute video.

Read more about the programme on our website. For questions, please contact our Education Office at onderwijs@tno.nl or call +31(0)88 86 66 270.

TIP SHEET ‘CORONA VIRUS: **TIPS FOR BEING HOME WITH YOUR FAMILY’**

Parents working from home, closed childcare facilities and schools; restrictions that had a major impact on families. For these families Nicole van Kesteren, in collaboration with Argo GGZ, Pro Parents, and IMH Nederland, developed a tip sheet for dealing with emotions, organising family life, and how you as a family can stay healthy.

- Consider the emotions in your family
- Balance work and family life
- Stay healthy and safe

Download the entire tip sheet

Visit the webpage Tips for parents during the corona crisis

‘LEARNING NEW BEHAVIOUR AND MAINTAINING IT IS DIFFICULT’

Vaccination against the coronavirus? In the Netherlands, the willingness to be vaccinated varies from person to person. Social psychologist Pepijn van Empelen developed an online interactive decision aid that helps people choose.

‘If you want to encourage people to change their behaviour’, Pepijn van Empelen explains, ‘you have to explain to them why and how they can do it.’ Van Empelen is a social psychologist and conducts research at TNO on behavioural change in the field of lifestyle and health.

FAST, RELEVANT RESEARCH

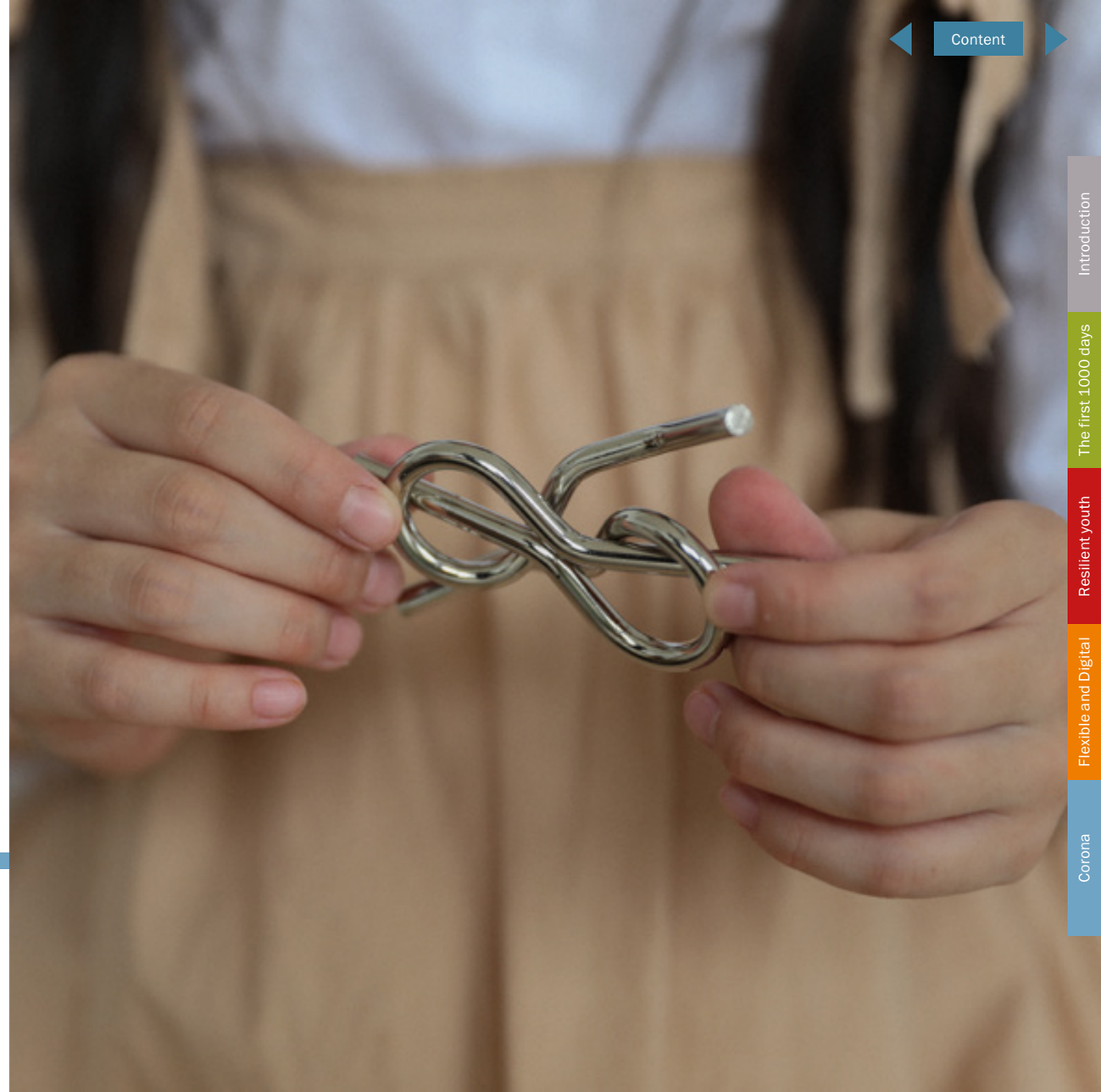
Initiating new behaviour is difficult, but maintaining it is especially a challenge. Soon after the outbreak of the corona virus, he examined in experimental studies how to support people in adhering to the corona behavioural measures, such as social distancing. The studies were conducted in a short time period, resulting in practically applicable advice on which behaviour change strategies could contribute to motivate people to adhere to the behavioural measures and to successfully carry them out in practice.

The work was an example of the research carried out under TNO’s Brains4Corona initiative, in which researchers conduct relevant research in a maximum of 8 weeks and develop tools that addressed societal needs.

VACCINATION

Meanwhile, in the spring of ‘21, Van Empelen also looked into the willingness and reluctance to get vaccinated. In 7 weeks’ time, he developed the online web application Corona Vaccination Decision Tool, which helps people to make a well-informed choice whether or not to get vaccinated. ‘We want people to receive reliable information and then choose on the basis of the knowledge they have gained, while weighing up their personal considerations of pros and cons.

For the development of the online decision aid, he built on earlier knowledge the vaccination decision aids, such as the decision aid about HPV vaccination for girls, the contagious Human Papillomavirus that can cause cervical cancer. Originally, parents of girls, eligible for the HPV vaccination felt insecure and had difficulty to make a vaccination decision. It was shown that the HPV vaccination decision aid contributed to reduced decisional conflict and hesitancy, and improved informed decision to vaccinate or not. Similarly, a vaccination decision aid was developed to support tor pregnant women eligible for the 22 weeks vaccination to prevent whooping cough in their babies after birth. This tool again showed its purpose, pregnant women feeling more informed to make the vaccination decision.



CONSIDERATIONS

The Corona Vaccination Decision Tool offers knowledge and information in manageable chunks about what other people choose. Van Empelen: 'Also, knowledge tests supports active learning and in addition, an interactive decision tool that helps people to weight their pros and cons supports people to make a personal decision for or against vaccination.'
'Someone can weigh the relevance of arguments for or against vaccination, and be provided with a summary of their most important reasons which then can guide their decision. For example, considerations such as whether you find it very important to protect others or yourself, that you want to count any side effects more heavily in your final judgement, or that you want to give religious or other reasons a stronger voice.'

DECISION TOOL

'The decision aid does not provide an advice but helps people to make a personal decision, based on the knowledge and your own considerations. It could also be a person still has questions. With a 'communication' module, which enables a person to map out what questions he/she still may have, whom to discuss these questions, and to think of what type of support is desired - for example, expertise, support or endorsement.

DOUBT

The goal is not to increase the willingness to get vaccinated, Van Empelen emphasises. 'Although the expectation is that, because we identify concerns and inform people, the willingness increases. Doubt is an unpleasant feeling and people want to get rid of it.

With making a informed choice you help people reduce decisional conflict. Of course, people can also feel strengthened in their decision not to get vaccinated. That's fine too: In any case, it's a well-considered decision.'

COMMUNICATION STRATEGY

Van Empelen makes a critical comment on the government's communication strategy regarding corona: 'If you want to change people's behaviour, you shouldn't make too many and too complicated rules and you shouldn't change them too often. That's when people get discouraged. In the past year, that is exactly what the government has done. Unfortunately, in doing so you lose the trust of citizens and their willingness to follow advice.'

He has a recommendation for the government to promote desired behaviour. 'It is important to remove barriers. People willing to vaccinate should be facilitated. For instance, by ensuring a vaccination site nearby, sending a reminder or letting them choose a time, place or type of vaccine. If people intend to demonstrate positive health behaviour, you help them by removing as many obstacles as possible'.

MOTIVATION FOR CORONA MEASURES

Social psychologist Pepijn van Empelen from TNO has studied, among other things, how to encourage compliance with the corona behavioural measures for instance by increasing empathy for vulnerable persons. People got more motivated to stick to the measures after watching a video in which an elderly person talks about how the fear of getting ill keeps her at home. And in which she talks about how grateful she is when people consider her as a vulnerable elderly person. Also, viewers of the video are subsequently more aware of the vulnerability of certain groups.

IF-THEN PLAN

Furthermore, an 'if-then planning tool' helped people who are willing to adhere to the behavioural measures, but sometimes ending up in difficult, unanticipated situations. In the ' if-then planning tool' they are presented with a number of situations which could serve as an obstacle to adhere to the behavioural measures such as social distancing. For example, when friends ring the doorbell when you are not allowed to have more than 1 person visiting. Or when you discover that the supermarket is too crowded, but you really need groceries for dinner. They read about these situations and then could select possible solutions that they thought would help to deal with the difficult situations. Hence, people are prepared for situations, so that a situation does not overwhelm them in real life.

RAPID RESEARCH AND DEVELOPMENT WITH **BRAINS4CORONA**

How can TNO researchers use their creativity to map out negative effects during corona, invent solutions at lightning speed, and study what works (better)? This question arose at TNO almost immediately after the outbreak of Covid-19 in the Netherlands and the corona preventive measures that came into force from mid-March 2020.

URGENT QUESTION

In no time, nearly 80 project proposals were submitted to TNO's Brains4Corona team. Important requirements for the proposals were that they had to be conducted within 2 months and that the initiative would help solve an urgent question or need in society.
For example, research was done into the re-use of face masks, the development of a Covid-19 passport, ventilation guidelines within buildings, and the development of a rapid Corona test. This so-called LAMP test was successfully put into use.

Read more about Brains4Corona on the TNO website

TNO innovation for life

TNO.NL

July 2022

PARTNERS

TNO works with partners to make projects a success. In the described knowledge projects in 2020 we collaborated with many organizations, parties and institutions active in the field of Youth both nationally and internationally:

- Ministry of Health, Welfare and Sports,
- Knowlegde Partners Youth: ZonMw, NCJ, NJI, Health Holland
- Universities
- Universities of Applied Sciences
- Professionals associations
- Parent associations
- Preventive Youth Health Care organisations
- Health care organisations
- Health insurance companies
- Bernard van Leer Foundation
- Bill and Melinda Gates foundation

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