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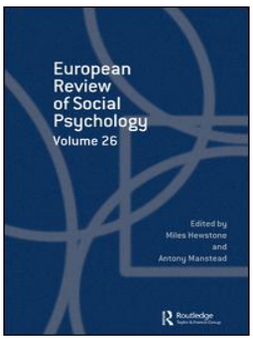

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Motivating voluntary compliance to behavioural restrictions: Self-determination theory–based checklist of principles for COVID-19 and other emergency communications

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ABSTRACT

An effective response to crises like the COVID-19 pandemic is dependent on the public voluntarily adhering to governmental rules and guidelines. How the guidelines are communicated can significantly affect whether people will experience a sense of self-initiation and volition, protecting compliance from eroding. From the perspective of Self-Determination Theory, a broad theory on human motivation and its interpersonal determinants, effective communication involves the delicate combination of providing rules and structure in a caring and autonomy-supportive way. Research in applied domains from public messaging to education and health has shown that when social agents set limits in more autonomy-supportive, caring, and competence-fostering ways, it predicts autonomous forms of compliance, which in turn predict greater adherence and long-term persistence. Building on SDT, integrated with insights from social identity theory, we derive a practice-focused checklist with key communication guidelines to foster voluntary compliance in national crises such as the prevention of COVID-19 spread.

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KEYWORDS Autonomy-support; crisis response; self-determination theory; interpersonal interaction; motivational style

Introduction

An effective response to crises like the COVID-19 pandemic is dependent on the public voluntarily adhering to governmental rules and guidelines. World Health Organisation has emphasised how "prevention, control and mitigation strategies" in outbreak response "rely heavily on community engagement,

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participation and ownership" (WHO, 2012, p. vi). Because many prescribed behaviours, like avoiding social contact, are very drastic, thereby involving a strong rupture in our daily lifestyle, they require substantial effort from citizens. Other required behaviours, like regular hand washing, are virtually impossible to monitor and enforce. For these reasons, governments have to deliver a compelling enough message to motivate people to voluntarily change their behaviour and sustain that change over time. Accordingly, *how* the guidelines are communicated and framed can make a significant difference in whether people will experience a sense of self-initiation and volition in compliance and how quickly their compliance starts to erode (Pope et al., 2018). Thus choosing an effective way of communicating one's message can play a crucial role in determining the success of a national response to an epidemic or another type of crisis.

In fostering voluntary compliance, Self-Determination Theory (SDT; Deci & Ryan, 2012; Ryan & Deci, 2017) can provide useful insights. SDT is an empirically based, organismic theory that focuses especially on human motivation and its social determinants, thereby highlighting a critical distinction between autonomous and controlled forms of motivation as they yield different effects on both wellness and effective behavioural change (E. Deci et al., 2017; Ryan & Deci, 2017; Ryan et al., 2008). From the perspective of SDT, effective communication in this pandemic involves the delicate combination of providing understandable rules and clear structure in a caring and autonomy-supportive way (Aelterman et al., 2019; Koestner et al., 1984; Vansteenkiste et al., 2012). A large body of correlational, experimental, and intervention research in diverse life domains, including health care (Ntoumanis et al., 2020; Williams et al., 1996), public messaging (e.g., Legault et al., 2011; Williams et al., 1999), parenting (e.g., Vansteenkiste et al., 2014), and workplaces (Slemp et al., 2018) have confirmed the critical role of autonomy support in fostering adherence and commitment to transmitted guidelines. Recent systematic reviews and meta-analyses of intervention studies have generally supported the importance of autonomy-supportive strategies for successful outcomes in health-related behaviour (Gillison et al., 2019; Ntoumanis et al., 2020), exercise and physical activity (Teixeira et al., 2012), and diabetes prevention (Phillips & Guarnaccia, 2020). Controlling messages, in contrast, have been shown to sometimes lead to defiance (Van Petegem et al., 2015; Weinstein et al., 2020), the desire to do the opposite of what is asked, emphasising the importance of ensuring that regulations are communicated in supportive ways. The importance of autonomy-supportive interpersonal communication and voluntary internalisation of cultural practices has been also validated cross-culturally, in, for example, both more individualistic and more collectivistic cultures (e.g., Chirkov & Ryan, 2001; Chirkov et al., 2003; Jang et al., 2009).

Although we primarily draw upon SDT, we also incorporate complementary insights from other social psychological theories, in particular from research on the social identity theory (SIT) through which highly relevant research has been conducted on how to ensure constructive public behaviour in various natural

disasters such as earthquakes and tsunamis (e.g., Drury, 2018; Drury et al., 2019). One of the theoretical contributions of the present articles is thus to provide some integration of SDT and SIT, and show how they can complement each other in providing practical insights in motivational communication. Although SDT is sometimes viewed by those not familiar with the theory as individualistic, we discuss how the theory is actually social to the core (Chirkov et al., 2003; Deci & Ryan, 2012), and, thus, is in no way oppositional to theories emphasising human sociality such as SIT. Besides SDT and SIT, we acknowledge research from other theoretical approaches, such as persuasion research, when they provide additional support for some of the insights derived from these two theories. From this theoretical integration, we derive a set of key guidelines that could be used to communicate effectively as to support successful behavioural change. The aim of the present contribution is thus to synthesise research from SDT and SIT to develop a practice-focused checklist with key communication guidelines to foster voluntary compliance in national crises such as the prevention of COVID-19 spread.

It should be noted that, although we draw from existing theories with robust empirical support, many of the principles we highlight have not been directly tested in policy communication contexts, and fewer still in relation to communicating behavioural recommendations to limit the spread of epidemics. Further, although evidence based on SDT interventions indicates that several communication styles together lead to more autonomous motivation and sustained behavioural changes (Gillison et al., 2019; Ntoumanis et al., 2020), there is less evidence for the effectiveness of many individual principles taken in isolation. Nonetheless, we believe that the listing of these theory- and evidence-derived guidelines is informative for policy considerations, presenting our best effort to propose strategies likely to have positive effects based on currently available evidence. The caveat is that many open questions remain that need to be answered by future research, potentially leading to refinement or extension of the principles provided herein.

Motivating communication

Voluntary and pressured compliance

Self-determination theory is a macro theory of human motivation and the social environments facilitating or undermining it. It has focused on the difference between *autonomous* and *controlled* types of motivation, demonstrating how they have very different implications for sustained behavioural change, compliance, and well-being (Deci & Ryan, 2000; Hagger et al., 2020; Moller et al., 2006; Ryan & Deci, 2017). Being autonomously motivated involves feeling a sense of choice and volition as the person fully endorses one's own actions or decisions. To illustrate, citizens respecting physical

distance would do so because they fully identify with the value of the behaviour. In contrast, controlled motivation means that the person engages in a certain action because one feels forced and pressured to do so. To illustrate, citizens may wash their hands regularly to avoid being criticised by their partner. Rather than being about objective choice, the distinction is about how the person experiences an action: Does it feel like something *I want to do*, denoting voluntary compliance, or something *I have to do*, denoting pressured compliance.

Crucially, autonomous motivation does not imply that citizens do whatever they choose. Even under conditions where people's behaviour is heavily restricted, as during the COVID-19 pandemic, they can willingly internalise and adhere to the introduced limits. A person may follow externally imposed, even controllingly communicated, rules such as laws, in a volitional way when they are perceived as coming from a trustworthy source and are legitimate in intent and purpose (Bradshaw et al., 2020; DeCaro et al., 2017; Ryan & Deci, 2017). Although during the pandemic people are required to adhere to fairly intrusive rules, like limiting their social contacts, they can nevertheless experience a strong sense of self-initiation and willingness in doing so when they fully endorse the reasons behind the restrictions. In this regard, hundreds of studies have shown that more voluntary or autonomous forms of compliance prospectively predict long-term persistence, including lower drop-out rates in sports and exercise (Edmunds et al., 2006; Pelletier et al., 2001) and school (Vallerand & Blssonnette, 1992), and more sustained intake of prescribed medication (Williams et al., 1998). Directly relevant to the COVID-19 pandemic, Morbée et al. (2020) showed in a series of three studies among Belgian citizens that both interpersonal and week-to-week variations in autonomous motivation predicted sustained adherence to COVID-19 measures over time. To foster autonomous motivation, certain key psychological pathways play a crucial role. In particular, SDT recognises three basic psychological needs for autonomy, competence, and relatedness (Deci & Ryan, 2000; Vansteenkiste et al., 2020), the supporting of which is critical for creating conditions for autonomous compliance and internalisation of guidelines. Autonomy refers to the experience of volition, willingness, and internal locus of causality. Competence concerns the experience of effectiveness, efficacy, and mastery. Relatedness is about the experience of care, inclusion, and interpersonal connection. The satisfaction of these three needs fosters well-being such as positive affect, vitality, and sense of meaningfulness (e.g., Martela et al., 2018; Reis et al., 2000; Ryan et al., 2010), even in times when insecurity prevails as during the COVID-19 crisis (Cantarero et al., 2020; Van der Kaap-deeder et al., 2020; Vermote et al., 2020). Apart from its critical role in individuals' mental health, need satisfaction also contributes to internalisation of the various values, goals, and practices (Markland &

Tobin, 2010; Milyavskaya et al., 2014). The three intrapersonal psychological needs thus provide the theoretical background for understanding why and how certain interpersonal interaction and communication strategies can foster successful and volitional internalisation of various norms, values, and guidelines.

Autonomy-supportive limit setting

The quality of motivation of individuals is to a significant degree determined by their interaction with their social environments. Here, the styles of communication play a major role. Autonomy-supportive communication denotes the "how" of communication and indicates whether the guidelines and limits are introduced and monitored in a way that supports citizen's self-initiation and internalisation or whether they instead are communicated in a controlling way thus pushing and pressuring people towards compliance (Soenens & Vansteenkiste, 2010). When introducing limits in an autonomy-supportive way one needs to provide a meaningful and clear rationale for them and explain why the limits are necessary, one needs to acknowledge the feelings and difficulties they might face due to the new restrictions, and within the limits possible one needs to emphasise choice by giving people options on how to fulfil the necessary guidelines (Deci et al., 1994). People also need assurance that any rules or laws will be fairly enforced, which adds to legitimacy and willingness to comply (DeCaro & Stokes, 2013; Ryan & Deci, 2017). Supporting autonomy thus does not mean letting people do whatever they choose, or not having rules or constraints. Instead, it means helping people to volitionally assent to such rules or constraints by letting them feel that their agency is acknowledged and they are treated as responsible and reasonable persons rather than subordinates that need to be surveilled and controlled.

In times of crisis when rapid responses are needed, there is a great temptation for authorities to rely on demanding and even intrusive language. Exclamations about what people "must" do can feel like the most direct way to ensure compliance, leading to communication that is anxiety-inducing, threatening, or guilt-instilling. Unfortunately, such controlling pressures, although they can impact short-term behaviours, may backfire over time, leading to a quicker erosion of compliance, and sometimes driving citizens' away from the full endorsement of the guidelines (Legault et al., 2011; Van Petegem et al., 2015; Vansteenkiste et al., 2014; Weinstein et al., 2020). Ironically, controlling styles of communication, although intended to foster compliance, can sometimes actually reduce people's motivation to engage in the desired behaviour, especially if citizens belief that the recommended behaviours fall within their personal jurisdiction and decision power (Nyhan et al., 2014; Van Petegem et al., 2017). For example, when

a pamphlet aiming to reduce expressions of prejudice was framed as prescriptive and pressuring, it actually increased explicit prejudice relative to the control condition (Legault et al., 2011). In contrast, an autonomy-supportive pamphlet that emphasised choice and appealed to the values of the reader led to reduction of explicit prejudice compared to the neutral control condition. Similarly, a parental prohibition to engage with certain peers was associated with the adolescents reporting affiliating more with these peers when prohibition was experienced as controlling but less with them when prohibition was experienced as autonomy-supportive (Soenens et al., 2009; Van Petegem et al., 2017). Thus, it can be more effective for public communicators to consider the "functional significance" of their communication, that is, whether it is experienced as controlling or informational from the point of view of the audience (Enzle & Anderson, 1993; Weinstein et al., 2020; Williams et al., 1999). Although this may require a sense of trust (Landry et al., 2008) in people's capacity to make informed decisions and engage in desirable behaviours, it can also lead to greater internalisation and thus better-maintained behaviours over time (Lavergne et al., 2010).

Furthermore, leaders can foster greater internalisation through their own example, thus modelling the values they wish others to adopt. When leaders authentically model and demonstrate values rather than just communicate them to others, their meaning becomes more compelling and more readily internalised. This has been demonstrated by research within SDT on *intrinsic value demonstrations*. For example, Brambilla et al. (2015) showed that both parental autonomy support and their authentic modelling of religiosity predicted more autonomous religiosity in their adolescent children (see also Yu et al., 2015). Practically then, this suggests that if the message is to social distance, communicators stand apart from others. If the advice is to wear a mask, communicators and those around them, would be doing so. On the other hand, when leaders are seen not modelling or following recommended guidelines (of which there have been several examples during COVID-19) this has the danger of eroding the public trust and people's willingness to adhere to guidelines.

Providing structure and guidance on how to adhere to necessary rules

Well-structured communication denotes the "what" of communication: for citizens to feel effective or competent in carrying out the required behaviours, they need clear guidelines concerning what is expected from them and how they can achieve these expectations (Aitken et al., 2016; Mouratidis et al., 2013). For example, "wash hands immediately when you come home and always after you have touched a potentially contaminated surface" is a clearer and more concrete message than "practice good hygiene", which is vague advice that can be interpreted in many different ways. Clarity around

what is expected and guidance on the best strategies to achieve the expected behaviour thus support people's ability to actually engage in the desired behaviour. For instance, several countries have now introduced a barometer (e.g., Ireland, Belgium), that is, a colour code system with different colours aligning with different COVID-19 risk levels. Clarity and predictability are achieved regarding the required behaviour in each phase and the indicators and thresholds used to relax or strengthen the measures. Constructive and informational feedback is also an important part of the structure, as it provides people with accurate information about how they are progressing towards the goal and what they could do to better be able to reach it. Informing people through accessible graphs how their adherence to the measures has helped to flatten the curve strengthens their collective efficacy and confidence to achieve desired outcomes. Adding to this, the credibility and trustworthiness of communicators matters (Pornpitakpan, 2004). For example, health-related information can be more compelling when coming from, or clearly derived from, scientists rather than politicians.

Effective communication thus needs to achieve two tasks at once: Support autonomy while providing clear structure. While sometimes structure-providing and autonomy-support can seem to contradict each other – too detailed instructions, while providing structure, can be interpreted as controlling (Goemaere et al., 2018) – research has shown that for the most part, they represent two compatible dimensions of motivating interactional style (Aelterman et al., 2019). The opposite of autonomy support is not structure, but control, where people feel that authorities are demanding and domineering, whereas the opposite of structure is chaos, in which people feel authorities are not providing clear guidance on what they should do and how they can get there. Accordingly, rather than having to choose between autonomy support and structure to foster internalisation of restrictions and adherence to them, communicators can provide structure and directives in autonomy-supportive ways (Aelterman et al., 2019; Koestner et al., 1984; Vansteenkiste et al., 2012).

Supporting relatedness and social identity

In motivating voluntary compliance, a third important factor that energises internalisation of required behaviour is whether people experience a sense of connection and mutual bond, both with those communicating the guidelines as well as with those in their immediate surroundings and the society at large (Ryan & Deci, 2017). When people identify with and trust their leaders and policy-makers, they are more likely to listen to them and interpret their messages in a positive way. Relationship research has shown that relatedness and autonomy-support tend to co-occur and feed into each other (Deci et al., 2006; La Guardia et al., 2000). For example, students were more intrinsically motivated for task parents chose for them when they felt close to their parents (Bao & Lam, 2008).

Furthermore, children and adolescents who feel well connected with parents and teachers are typically more willing to internalise and accept their norms and guidelines (e.g., Graça et al., 2013). Also, when people feel they are part of a community and belong to it, they are more likely to engage in behaviour benefiting that community (Y. Chen & Li, 2009).

Relatedness is not just a one-way street, with people wanting to be understood and cared for. People also have the natural inclination to care for others, and to act prosocially. An important part of changing behaviour therefore also involves showing how behaviours *connect with relatedness* and belonging. Evidence suggests that people will typically autonomously endorse what is good for others or contributes to their groups (Amiot et al., 2012). In fact, when behaviour change is framed in ways that appeal to people's natural or intrinsic goals such as concern for others and contributing to society through solidarity, adherence is more likely (Pelletier & Sharp, 2008; Vansteenkiste et al., 2004). Messages such as "you can save lives by staying home" and "we are all in this together" help support a sense of contribution and belonging, both of which support better internalisation of behaviour guidelines. A study of messages promoting the hand washing of health care professionals in a hospital found that a message that emphasised patient safety ("Hand hygiene prevents patients from catching diseases") was more effective in increasing actual hand washing compared to a message emphasising personal safety ("Hand hygiene prevents you from catching diseases") (Grant & Hofmann, 2011). A recent experiment replicated this effect in people's willingness to engage in COVID-19 prevention behaviours (Jordan et al., 2020). They framed their message as emphasising either how COVID-19 is a "serious threat to you" or how it is a "serious threat to your community". Again, it was the latter message that promoted stronger willingness to wash hands, refrain from touching others, and to engage in other preventive measures. Similarly, another recent study found that appealing to people's duty to protect "families, friends, and fellow citizens", was more likely to be shared and to (slightly) increase handwashing compared to a standard message (Everett et al., 2020). Promoting this sense of belonging and unified purpose across a social group promotes the assimilation and acceptance of norms and behaviours (Pavey et al., 2012; Tajfel & Turner, 1986). Also, when leaders express their gratitude for citizens' efforts and recognise the sacrifices of the population, citizens are more likely to feel understood. A governmental campaign that supports the motivation and well-being of the citizens may further be interpreted as a sign of authentic concern and support, thereby promoting a sense of connection.

Here, research based on SDT can be supplemented by an interesting line of research carried within social identity approach (Drury, 2018; Muldoon et al., 2019; Tajfel & Turner, 1986) that has examined group processes in various mass emergency situations (Drury, 2018; Drury et al., 2019). In this research survivors

of various emergencies (e.g., Drury et al., 2009) such as adults affected by the 2010 Chile earthquake (Drury et al., 2016) were interviewed and surveyed. Results suggested that disaster exposure is connected to a sense of common fate, which in turn was connected to a sense of social identification with others affected by the disaster, which in turn was connected to giving social support and participating in coordinated support activities within the community. Thus, in contrast to popular disaster myths about mass panic, disorder and selfishness, Drury et al. (2019) cite evidence proposing that more often than not people in mass emergencies are capable of surprisingly coordinated, emergent action where people tend to spontaneously help friends and strangers alike. According to social identity theory, a key explanatory factor of people's prosocial behaviour is their sense of social identity, defined as "that part of an individual's self-concept which derives from his [sic] knowledge of his [sic] membership of a social group (or groups) together with the emotional significance attached to that membership" (Tajfel, 1974, p. 69). What the theory suggests is that in facing an acute crisis together people have a sense of common fate, which leads them to develop an emergent, shared social identity, which then becomes the basis for mutual solidarity and the provision of social support for each other (Drury, 2018; Drury et al., 2016). From the point of view of SDT, the social identity approach thus provides important support and specification of the mechanisms through which a stronger sense of group relatedness and cohesion in crisis can lead to improved willingness to adhere to the common norms and guidelines and engage in behaviour that helps other people facing the same crisis.

Empirical research related to the SDT-based communication guidelines

Although direct evidence of SDT-related processes in relation to changes in protective behaviours during the COVID-19 pandemic has not yet been published, there is already considerable evidence from how these social psychological processes play out in other health-related behaviours. Field studies and controlled clinical trials have shown how autonomy-supportive communication leads to more autonomous motivation, which in turn leads to better outcomes in terms of, for example, long-term medication adherence (Williams et al., 1998), better dental hygiene (Münster Halvari et al., 2012), greater abstinence in tobacco cessation (Williams et al., 2006), and physical functioning, increased weight loss, and physical activity (Shah et al., 2016; Silva et al., 2010; Williams et al., 1996). The number of studies around the topic is too broad for a full review. Recent meta-analyses have identified 59 randomised controlled trials (Gillison et al., 2019) and 73 intervention studies (Ntoumanis et al., 2020) that are based on the principles of SDT in the health behaviour domain alone, with other meta-analyses gathering together studies about leader autonomy support in the workplace (Slemp

et al., 2018), and parental autonomy support (Vasquez et al., 2016). Accordingly, we will next review a few illustrative studies to give the reader an overview of the kind of evidence that has been gathered to support the principles of SDT in fostering voluntary compliance to behavioural guidelines, and then conclude this review of empirical studies by summarising the results of a few recent meta-analyses on the overall effectiveness of SDT-based interventions.

Whether instructions for desired behaviour are autonomy-supportive or controlling has been demonstrated to influence many motivational and behavioural outcomes. In an educational context, for example, we highlight three field experiments with high school and college students on how subtle differences in instructions influenced students' learning, performance, and perseverance (Vansteenkiste et al., 2004). In the first study, 200 Belgian college students read a text about recycling, with the instructions for the task delivered in either an autonomy-supportive versus a controlling way. In the autonomy-supportive condition, the instructions used phrases such as "you can", "if you choose", and "we ask you to" (e.g., "You can decide to learn more about recycling strategies"), whereas in the controlling condition phrases such as "you must", "you have to" and "you should" were used (e.g., "You should learn more about recycling strategies"). The study also crossed the autonomy support manipulation with a goal content manipulation in a 2 × 2 design, where some students were told that reading the text would help them to better serve the community (intrinsic goal) and others told that reading the text would help them save money (extrinsic goal) (see *Principle: Appeal to people's natural willingness to help each other*). After the reading task, participants rated their autonomous motivation for the task, and the extent to which they had engaged with the text in superficial or deep way. As measures of performance, they were then examined on their conceptual understanding of the text material, and a week later, the teacher rated the quality of their personal contribution to a group discussion on the topic. The students were also offered two voluntary options for learning more about recycling, and opting to engage in these activities was taken as evidence for free-choice persistence on the topic. Comparison of the results in the four conditions showed significant main effects for both autonomy-supportive instructions and intrinsic goal contents, with both resulting in more autonomous motivation for learning, better performance in the examination of conceptual understanding, and more free-choice persistence (see Table 1). Mediation analyses demonstrated that students' autonomous motivation fully mediated the relations between autonomy-supportive vs. controlling communication and deep processing, test performance and persistence.

A second study involving 196 female marketing students at a Belgian college reading a text about business communication styles in a similar 2 × 2 design and similar manipulations of autonomy-supportive vs. controlling

Table 1. Cell means and standard deviations for the four experimental conditions, and analysis of variance (ANOVA) results for the instruction autonomy-supportiveness effects.

Variable	Autonomy-supportive instructions				Controlling instructions				ANOVA results	
	Intrinsic goal		Extrinsic goal		Intrinsic goal		Extrinsic goal			
	M	SD	M	SD	M	SD	M	SD	F	η2
Study 1									(1, 196)	
Autonomous motivation	3.42	0.25	2.63	0.28	2.33	0.24	1.91	0.25	637.21***	.77
Superficial processing	1.62	0.47	2.48	0.53	2.53	0.42	2.89	0.43	97.19***	.33
Deep processing	3.42	0.34	2.65	0.40	2.75	0.30	2.24	0.46	100.28***	.34
Test performance	7.38	1.11	6.04	1.04	5.75	0.82	5.14	0.90	83.22***	.30
Persistence	1.94	0.16	1.16	0.49	0.94	0.50	0.48	0.42	50.40***	.21
Study 2									(1, 373)	
Autonomous motivation	3.30	0.24	2.44	0.35	2.60	0.37	1.86	0.37	344.56***	.48
Superficial processing	1.63	0.42	2.45	0.47	2.46	0.38	2.77	0.44	169.44***	.31
Deep processing	3.45	0.34	2.65	0.38	2.69	0.31	2.28	0.55	179.76***	.33
Underlining	0.96	0.20	0.53	0.50	0.48	0.50	0.17	0.38	94.31***	.20
Test performance	7.38	1.18	5.93	1.08	5.59	1.02	4.82	1.01	168.94***	.31
Persistence	3.98	0.01	2.57	0.48	1.60	0.50	0.75	0.38	169.96***	.31
Study 3									(1, 220)	
Autonomous motivation	3.33	0.31	2.32	0.40	2.56	0.43	2.08	0.35	100.94***	.32
Test performance	7.08	1.05	5.91	1.08	5.76	1.06	5.14	0.90	57.81***	.21
Persistence	1.80	0.55	1.17	0.98	0.69	0.95	0.29	0.72	81.68***	.27

*** $p < .001$.

instructions and intrinsic vs. extrinsic goal content replicated these findings, showing again that autonomy-supportive instructions predicted increased autonomous motivation, less superficial processing, increased deep processing, test performance, persistence and the extent which students underlined the text (see Table 1 for main effects and effect sizes). A third study again replicated these findings using a sample of 224 Belgian high school students, who received written materials on exercises in the Asian sport Tai-bo in a similar 2 × 2 design using subtle manipulations of the wording making the instructions either autonomy-supportive or controlling. After reading the texts, students learned Tai-bo exercises during the next two physical education classes, rated their autonomous motivation for the exercises, and at the end of the classes were graded on their performance on these exercises by the instructor, who was naïve to the experimental conditions. Finally, they had two voluntary options to demonstrate the exercises to other students. Again, autonomy-supportive instructions predicted more autonomous motivation as well as test performance, and free-choice persistence compared to the controlling condition (see Table 1 for the main effects and effect sizes). The results of these three studies have clear policy communication implications in demonstrating that subtle differences in how autonomy-supportive instructions are for a given task can have tangible effects on motivation and voluntary commitment, and through them, on behavioural outcomes (See *Principle: Use non-controlling, informational language*).

But beyond autonomy support, provision of the structure is also important for motivating people to behave in certain ways. As one example, 1036 students aged 12–21 answered a survey about how much they perceived their teachers to be autonomy-supportive and, as an indicator of provision of structure, how much the teachers provided them with clear expectations (Vansteenkiste et al., 2012). The survey also asked about students' autonomous motivation, learning outcomes (time management, concentration, deep-level information processing, persistence and test anxiety) and problem behaviour (externalising problem behaviour and skipping classes). Confirmatory factor analysis showed that autonomy support and clear expectations represented two separate factors. They correlated positively at .54, demonstrating, contrary to some ideas about teacher expectations diminishing student autonomy, that a teacher can have clear expectations while supporting the autonomy of the students. A cluster analysis performed on autonomy support and clear expectations found that students in the "high autonomy support – clear expectations" cluster reported significantly higher scores than any other cluster on time management, concentration, information processing and persistence, and lower scores on externalising problems and test anxiety. The study thus demonstrates that it is especially the combination of autonomy support and provision of structure that is associated with beneficial self-reported learning outcomes and less externalising problem behaviour (see also Jang et al., 2009). In designing effective communication, one thus can and should simultaneously support autonomy *and* provide structure, to optimally support the voluntary motivation of the audience (see *Principle: Provide concrete instructions, clear expectations, and formulate collective goals to strive for*).

SDT-based principles have also been tested in the context of communicating prohibitions. In a longitudinal study with two waves one year apart, and two samples (Sample A T1 n = 228, T2 n = 202, Sample B T1 = 304, T2 = 180) adolescents (mean age 16.5) were asked to report how much their mothers prohibited them from engaging in certain behaviours in two domains, as regards hanging out with some friends, and as regards engaging in various immoral behaviours such as acting selfishly (Vansteenkiste et al., 2014). In addition to this degree of prohibition, the participants were asked "If your mother would prohibit this, how would she make this clear to you?" followed by items tapping into autonomy-supportive style (e.g., "would give a meaningful explanation for why she thinks this is important") and externally controlling style (e.g., "would yell at me and tell me that otherwise I will be punished"). The participants were also asked about the reasons for following parental rules, in particular, the quality of internalisation in terms of external regulation, introjected regulation, and identified regulation, as well as, for the moral domain, oppositional defiance. The longitudinal associations were examined in a series of four structural equation models

using path analysis, controlling for age, gender, and educational background, each analysis examining the bi-directional effects of parenting constructs (degree of prohibition, autonomy-supportive style, and controlling style) and one particular type of internalisation (identified regulation, introjected regulation, external regulation, or oppositional defiance). The results showed that for both friendship-related prohibitions and morality-related prohibitions, autonomy-supportive style predicted over time positively and significantly identified regulation (standardised path coefficients for friendship domain .14, for moral domain .18), introjected regulation (.15/.19), as well as lack of oppositional defiance (−.16), when controlling for auto-regressive paths. Controlling style, in turn, predicted increased oppositional defiance in the moral domain (.17) and external regulation in the friendship domain (.27) but not in the moral domain. Interestingly, the degree of prohibition as such did not predict any motivational outcomes over time, when autonomy-supportiveness and controlling style were controlled for. Further, adolescents' (lack of) internalisation also fed back onto the perceived communication style, providing evidence for the reciprocal dynamics in parent–child relationships. Overall, these results demonstrate that internalisation of prohibitions is influenced by whether they are communicated in autonomy-supportive style, where the reasons for the prohibitions are clearly explained (see *Principle: Providing a meaningful reason or justification for acting*). Too controlling style can in the worst case increase oppositional defiance, where people actively rebel against the prohibition.

Similar evidence on the link between controlling communication and defiance was provided in a recent study that concentrated on the tone of voice instead of the content of the message (Weinstein et al., 2020). In a first study 95 participants were asked to listen to ten sentences and imagine themselves to be the target of these sentences. The sentences were randomly selected from a pool of sentences recorded by professional actors who aimed either to communicate autonomy-supportive or controlling stance. Half the participants listened to autonomy-supportive and the other half to the controlling messages. After listening to the sentences, participants were asked to rate how much the speakers sounded supportive vs. pressuring, and how much the sentences triggered deviance in them with items such as "triggered a sense of resistance in me", and "made me want to resist attempts to influence me." The results (displayed in Table 2) contrasted autonomy-supportive vs. controlling conditions against each other in three separate cases: when manipulating autonomy-support through tone of voice, when manipulating it through word choice, and when manipulating it through both tone of voice and word choice simultaneously. Those listening to sentences sounding controlling experienced the speaker as more pressuring compared to those listening to autonomy-supportive sounding sentences. Similarly, the controlling condition triggered more defiance than did the

autonomy-supportive condition. A mediation analysis demonstrated that the effect of condition on defiance was fully mediated by how pressuring the speaker was perceived to be.

The second study replicated exactly the same paradigm as used in the first study with 100 participants, but this time the participants were also asked to rate how much the speakers were powerful vs. powerless and warm vs. cold, to ensure that such perceptions were not driving the effect. The results (displayed in Table 2) showed no difference in speaker power but participants in the controlling (vs. autonomy-supportive) condition rated the speaker as more pressuring and colder, and reported more defiance, with pressure mediating the relationship between condition and defiance. The third study replicated this paradigm but this time with a 2 (motivation: controlling vs. autonomy Support) ×3 (mode of communication: tone of voice vs. word choice vs. both) design, where both the tone of voice and the content of the sentences were manipulated to be either controlling or autonomy-supportive to examine their comparative contributions to defiance. Tone of voice was manipulated similarly to previous studies while semantic content was manipulated by either using controlling phrases, e.g., "you must", or autonomy-supportive phrases, e.g., "do what you think is most important". Two hundred and eighty-five participants recruited through Prolific Academic were randomly assigned to one of six conditions, and again rated how pressuring the speaker was perceived to be, and how much defiance they experienced afterwards. The results (displayed in Table 2), demonstrate that both tone of voice and word choice taken separately as

Table 2. The cell means and SDs for controlling and autonomy-supportive conditions and results of MANOVA follow-up analyses in Weinstein et al. 2020.

	Controlling condition		**Autonomy-supportive condition**				
	M	SD	M	SD	*F*	p	η_p^2
Study 1	Tone of voice		Tone of voice		(1, 89)		
Speaker pressure	5.35	1.59	3.95	1.86	15.60	< .001	0.15
Defiance	2.30	0.98	1.74	1.07	6.94	.01	0.07
Study 2	Tone of voice		Tone of voice		(1,96)		
Speaker pressure	5.47	(1.40)	4.28	(1.84)	11.43	< .001	0.11
Speaker power	5.21	(1.44)	4.89	(1.31)	1.03	0.31	0.01
Speaker cold	5.14	(1.36)	4.14	(1.77)	10.79	< .001	0.10
Defiance	2.63	(1.03)	2.01	(1.05)	6.24	< .001	0.07
Study 3	Tone of voice		Tone of voice		(1, 97)		
Speaker pressure	5.42	1.12	3.99	1.53	29.45	< .001	0.23
Defiance	2.31	0.89	1.87	0.93	5.61	< .001	0.06
	Word choice		Word choice		(1, 84)		
Speaker pressure	5.61	0.98	4.20	1.81	21.34	< .001	0.20
Defiance	2.74	1.11	2.01	1.10	8.89	< .001	0.10
	Voice + Word choice		Voice + Word choice		(1, 92)		
Speaker pressure	6.06	0.99	3.21	1.51	102.80	< .001	0.53
Defiance	2.84	1.11	1.68	0.93	30.61	< .001	0.25

well as when combined led to significant differences in the expected direction both as regards the perception of speaker pressure and defiance. Moreover, the difference between the conditions was most pronounced when the tone of voice and word choices were used in combination to communicate either autonomy support or control. The studies thus demonstrate how defiance can be elicited not only by controlling word choices but also by using a controlling tone of voice. To entice voluntary adherence, it is thus important to communicate, both through the choice of words and the tone of voice, in a way that respects the autonomy of the audience (see *Principle: Treat people as responsible agents).*

As an example of an SDT-based intervention study aiming to influence real-life outcomes, 1006 smokers in the greater Rochester, NY, area were recruited for a study of smoker's health (Williams et al., 2006). Half were randomly assigned to a community care condition where they received a Public Health Service booklet on quitting smoking, a measure of their cholesterol levels, and a list of active smoking cessation programmes in the area, and encouragement to discuss the matter with their physician and enrol to a smoking cessation programme. The other half were assigned to an intervention involving four meetings (first 50 min face-to-face, subsequent ones 20 min in person or over the phone) with a study counsellor in the subsequent 6 months, with the counsellor having been trained to support the autonomy of the participants in making decision as to whether to quit smoking and if so, supporting their competence in creating a cessation plan (see *Principle: Address key obstacles for change*). Participants in both conditions filled out surveys on their smoking and medical history, and intention to quit at the baseline, with follow-up assessments after 1 month asking about experienced autonomy support, competence motivation, and autonomous motivation for intending to quit, as well as for taking medication helping with cessation. Another follow-up assessment at 6 months examined whether the participant had smoked in the past 7 days using both self-report and objective assessment of serum cotinine. Participants were also asked to report whether they had used medication to aid in cessation. Participants also reported their quitting day and those who had quit were contacted 6 months from that date to assess prolonged abstinence. Comparison of the two conditions (see Table 3) showed that those in the SDT intervention increased experienced autonomy support, competence motivation, and autonomous reasons for taking medication at 1-month follow-up but not autonomous reasons for quitting. At 6-month follow-up, SDT intervention predicted abstinence from smoking assessed both through 7-day abstinence on that day as well as 6 month prolonged abstinence. Participants in the SDT intervention also reported an increased prevalence of medication use and increased number of days of using medication to assist in cessation. Thus, a 2-h-long intervention based on the principles of SDT

Table 3. Motivational and smoking cessation outcomes in community care and SDT intervention groups in Williams et al. 2006.

Outcome	Community care	SDT intervention	Odds ratio	CI	p
Autonomy support at 1 month	5.66	6.26			< .001
Autonomous reasons for quitting at 1 month	6.16	6.22			.23
Autonomous reasons for taking medication at 1 month	5.21	5.46			.002
Competence motivation at 1 month	4.25	4.74			< .001
Used medication	15.8%	30.8%	2.38	1.67, 3.39	.001
Days on medications	5.67	20.05	–	–	.001
7 day abstinence from smoking at 6-months	4.1%	11.8%	3.11	1.67, 5.79	.001
6-month prolonged abstinence	3.8%	11.2%	3.22	1.69, 6.15	.001

significantly impacted participants motivation and ability to quit smoking afterwards demonstrating the importance of communicating with participants in autonomy- and competence-supportive ways to make them voluntarily change their behaviour.

Another intervention study aimed to enhance the physical function of HIV-positive community-dwelling older (45 or older) participants (Shah et al., 2016). Participants (n = 67) were randomised to either control group where they were instructed to maintain their usual activities or to the intervention group, who received six patient-centred counselling sessions (first one 60 min face-to-face, subsequent ones 15–30 min phone calls) based on the SDT model of behaviour change in which participants were encouraged to set physical activity goals in autonomy-supportive ways (See *Principle: Appeal to the aspirations, goals, and values of the people*), and their sense of competence supported. Physical function was assessed both at baseline and after 12 weeks using several tests such as gait speed test, chair rise, 6-min walk, isometric strength test, and the Physical Performance Test (which involves nine physical exercises ranging from standing up from a chair to 50-foot walk). Results, controlling for demographics, demonstrated greater improvement after 12 weeks in the treatment group compared to control group on the Physical Performance Test, as well as gait speed, 6-min walk, chair rise, and knee extensor strength but not in knee flexion and obstacle course. In addition, the intervention group reported engaging in more physical activity and having more autonomous reasons for such activity. This study again demonstrates the importance of the SDT-based principles in effecting voluntary adherence to the desired behaviour.

These studies reviewed here represent only a small sample of the various studies that have been conducted over the years on the various aspects of SDT-based interventions in various contexts. To summarise the findings of such SDT-based interventions, two recent meta-analyses from the health promotion

context are helpful. The first of them focused on SDT-based interventions to promote motivation for health behaviour change, and was able to identify 59 randomised controlled trials on the topic. The key finding was that the SDT-based strategies were effective in bringing forth more autonomous motivation, especially when multiple strategies were used in combination (Gillison et al., 2019). As Table 4 summarises, the SDT-based interventions were associated with increased autonomy support, motivation, as well as satisfaction with basic psychological needs for autonomy, competence, and relatedness. Another recent meta-analysis of 73 intervention studies using SDT-based strategies to enhance health behaviour (Ntoumanis et al., 2020) similarly found support for the ability of the SDT-based interventions to increase autonomous motivation, need satisfaction, and sense of need support (Table 4). Importantly, this meta-analysis also examined behavioural and health outcomes, demonstrating that the interventions were, on average, successful, with a medium effect size at the end of the intervention period (g = 0.45), and a small effect size at follow-up (g = 0.28) on health behaviour, leading to a small improvement in indicators of physical health at follow-up (g = 0.28). It is worth emphasising that the interventions typically used several of the SDT-based techniques and guidelines rather than testing one in isolation. Thus, although results for the interventions as such are encouraging, to date, there is not extensive evidence on the effectiveness of individual techniques or principles used as drivers of this effect. Thus, the authors recommend using multiple strategies together to ensure effectiveness.

Table 4. Main results from the two meta-analyses (Gillison et al., 2019; Ntoumanis et al., 2020) on the effectiveness of SDT-based interventions on key motivational and behavioural outcomes.

Gillison et al **key results**	**k**	**g**	**95% CI**		**p**	**Q**	**p**	**I2**
Autonomy	26	0.81	0.45	1.16	-	608.00	<.01	96%
Competence	34	0.63	0.35	0.90	-	815.80	<.01	96%
Relatedness	19	0.28	0.01	0.54	-	161.78	<.01	89%
Motivation	60	0.41	0.25	0.57	-	1020.60	<.01	94%
Autonomy support	19	0.84	0.51	1.17	-	470.75	<.01	96%
Ntoumanis et al. **key results**	**k**	**g**	**95% CI**		**p**	**Q**	**p**	**I2**
Need support – End of intervention	21	0.643	0.354	0.932	<.01	193.84	<.01	89.7
Need support – Follow-up	6	1.129	−0.351,	2.609	.13	467.68	<.01	98.9
Combined need satisfaction – End of intervention	23	0.369	0.187	0.550	<.01	199.25	<.01	89.0
Combined need satisfaction – Follow-up	11	0.486	−0.048	1.019	.07	473.93	<.01	97.9
Autonomous motivation – End of intervention	37	0.296	0.169,	0.424	<.01	146.39	<.01	75.4
Autonomous motivation – Follow-up	14	0.181	−0.001,	0.362	.05	41.84	<.01	68.9
Health Behaviour – End of intervention	49	0.450	0.329	0.571	<.01	334.39	<.01	85.6
Health Behaviour – Follow-up	28	0.278	0.172	0.384	<.01	78.08	<.01	65.4
Physical health – End of intervention	16	0.042	−0.151	0.234	.67	52.30	<.01	71.3
Physical health – Follow-up	14	0.280	0.033	0.528	.03	174.12	<.01	92.5
Psychological health – End of intervention	22	0.294	0.135	0.452	<.01	78.00	<.01	73.1
Psychological health – Follow-up	10	0.137	−0.087	0.361	.23	36.71	<.01	75.5

Practical guidelines for motivating communication

Communications fostering voluntary motivation are about delivering one's message in a way that appeals to the values, interests and responsibility of people treated as autonomous agents rather than using controlling language to enforce certain behaviours (Lavergne et al., 2010; Moller et al., 2006). Building on past research on the autonomy-supportive introduction of limits (e.g., Koestner et al., 1984; Savard et al., 2013) and its autonomy-supportive monitoring (Rodríguez-Meirinhos et al., 2020), and more generally on the autonomy-supportive strategies identified successful in SDT-based interventions (Gillison et al., 2019; Ryan & Deci, 2017), we offer the following theory- and evidence-based principles to policy-makers, politicians, and other practitioners aiming to ensure the voluntary cooperation and adherence of the public (summarised in Table 5). For each principle, we offer a general definition and description as well as specific examples of how they might be applied to help to address the COVID-19 pandemic. In classifying the principles, we follow the recent expert classification of Teixeira et al. (2020) who identified 21 SDT-based motivation and behaviour change techniques aiming to support people's basic psychological needs and autonomous motivation, and organised them based on whether they were seen as primarily supporting autonomy, competence, or relatedness – even though it is likely that many of the proposed principles support several of the needs simultaneously.

Key behaviours that are required to limit COVID-19 transmission include, e.g. frequent hand washing, disinfecting surfaces, keeping distance to each other, wearing face masks, limiting close contacts, and coughing to a tissue (West et al., 2020). Personal hygiene behaviours are not only required from the general public but also healthcare and social services staff as well as teachers and members of other organisations. Thus, the need to communicate necessary guidelines in an autonomy-supportive way is not only crucial for policy-makers but also for hospital managers, principals and teachers as well as managers of organisations.

Autonomy-supportive communication techniques

Provide a meaningful rationale

Definition. Providing a meaningful and clear reason or justification for acting. Clarify the solid and evidence-based reasons behind any constraints or restrictions in actions.

Rationale. Rules without justification feel externally forced upon the individual, but when the individual feels that they have received proper and, if necessary, fairly detailed explanation for why a certain behaviour is necessary, complying with it becomes more voluntary. By explaining the reasons

Table 5. Preliminary list of the theoretical principles with definitions and examples relevant to COVID-19 pandemic.

Theoretical principle	Definition	Practical example
Autonomy-supportive communication techniques		
Provide a meaningful rationale	Providing a meaningful reason or justification for acting.	Clarify the evidence-based reasons behind any restrictions such as physical distancing rules: what is avoided, what is gained by following the rules.
Treat people as responsible agents	Highlight that individuals are active agents that can make responsible and informed decisions and that their actions can make a difference.	Be clear that the prevention of spread depends on the choices and contributions we as individuals make, thus requiring each of us to take responsibility in doing our part.
Use non-controlling, informational language	Use informational, non-judgemental language that conveys freedom of choice, collaboration, and possibility. Avoid pressuring, controlling, and guilt-inducing language.	In communicating various rules and restrictions, support people's sense that they can do it because they see the value, rather than because it is the rule.
Appeal to the aspirations, goals, and values of the people	Support desired behaviours by connecting them with what matters to people.	Talk about the value of protecting everyone, including vulnerable people you likely know.
Within necessary limits, provide choice on how to adhere to the rules	Even within constraints, provide a sense of choice where possible.	Be clear about what kinds of outdoor activities can be safely done; encourage on-line connectedness.
Competence-supportive communication techniques		
Provide concrete instructions, clear expectations, and formulate collective goals to strive for	Offer people clear guidance on what behaviour is required, concrete instructions on how this behaviour is achieved, and which specific goals to strive for	Formulate collective goals with clear critical parameters, provide exact instructions to different situations such as when and how to practice hand hygiene.
Provide constructive, clear, and relevant feedback on how successful people have been in adherence to the measures	Provide relevant, tailored, and timely feedback about how well people are doing and how their efforts have been progressing.	Communicating statistics about the success of social distancing measures and how the measures have helped to flatten the curve as regards infections, or decreased the number of ICU patients.
Address key obstacles for change	Identify what the likely barriers that people may have to behaviour change, and provide instructions on how to overcome them.	For example, in promoting the use of face masks, support and fund providing people with masks. For hand hygiene, memory aids help people remember when hands should be washed.

(*Continued*)

Table 5. (Continued).

Theoretical principle	Definition	Practical example
Relatedness-supportive communication techniques		
Acknowledge people's own perspectives, feelings, and potential conflicts	Demonstrate that you recognise the barriers and obstacles people may have to engaging in key behaviours to convey empathy to them.	Clearly acknowledge economic hardships, and sacrifices many people are accepting as side effects of adhering to the guidelines.
Emphasise and facilitate shared identity and common fate	Building a sense of shared identity and common fate among the people affected by the crisis.	Emphasise that we are all in this together and how the crisis touches each of us.
Build trust through transparent and open communication	Communicating what is known and what is not known in a timely and transparent way to the public.	Be transparent about risks and uncertainties in the current knowledge. Publish models, estimations, and assumptions upon which the government is building the strategy.
Identify trusted messengers to mediate the guidelines to various groups	Use people who can bring the message in a trustworthy way and inspire perceived legitimacy of recommendations and guidelines within various groups and communities.	Use health professionals to communicate health guidelines rather than politicians, and for various subgroups, try to identify trusted people within that community to act as messengers.
Appeal to people's natural willingness to help each other	Appealing to people's motivation to help other people.	Emphasise how we can help others, especially vulnerable risk groups, even by simple steps like staying home.

for certain actions the communicator highlights and reinforces motives that could form the basis of well-internalised motivation (Deci et al., 1994; Moller et al., 2006). Accordingly, providing a meaningful rationale for any guidelines, rules, and orders helps to ensure that people are willing to follow them. Justifying requests for the target behaviour by explaining what they result in has been found effective also in physical activity and healthy eating interventions: A meta-analysis investigating most promising combinations of various techniques in such interventions (Dusseldorp et al., 2014) found that it was effective to provide information about behaviour–health link, in combination with a) prompting intention formation, and b) providing information on consequences and using follow-up prompts.

Example of application in policy communication. Explaining the reasoning behind physical distancing measures such as the risks that asymptomatic people can spread the virus and that such spread can overwhelm healthcare systems, thus making it necessary to engage in physical distancing. It is also important to explain what is to be gained if most people follow strictly the guidelines: Protecting the healthcare system from becoming overwhelmed, fewer deaths, keeping the schools open, and preserving people's mental health in the long run. These rationales can be communicated through accessible messaging as well as rationale-relevant info-graphics.

Treat people as responsible agents

Definition. Highlight that individuals are active agents that can make responsible and informed decisions and that their actions can make a difference.

Rationale. Sometimes the public communication and policy measures can feel patronising, emphasising people's weaknesses and inability to control their own lives (Drury et al., 2019). This carries the danger of being a self-fulfiling prophecy: People who are treated as irresponsible feel that responsibility can not be expected from them, while feeling that one is trusted tends to increase required responsible behaviour (Lau et al., 2014; Salamon & Robinson, 2008). For example, a systematic review on the mechanisms of change within motivational interviewing in relation to health behaviours (Copeland et al., 2015), found that of therapists' behaviours, the most promising mechanism was MI spirit: "collaboration, evoking the client's ideas about change and autonomy", which corresponds to the principle at hand: assigning autonomy to people as responsible agents. Thus, it is important to make people feel that they are treated as responsible and capable agents that, after reflection, can make informed decisions. To achieve this goal, people need to be provided relevant information on the impact of different behavioural options.

Example of application in policy communication. Be clear that the prevention of spread depends on the choices and contributions each individual makes, thus requiring each to take responsibility in doing one's part. A barometer that informs citizens on the risk level of the situation in their region allows them to better monitor the epidemic and proactively take initiative to adjust their behaviour to the circumstances at hand. Also, informing citizens on the impact of keeping a more limited or more extensive set of narrow contacts on the expected evolution in the infections and hospitalisations allows them to take more informed decisions.

Use non-controlling, informational language

Definition. Use informational, non-judgemental language that conveys freedom of choice, collaboration, and possibility. Avoid pressuring, controlling and guilt-inducing language.

Rationale. Informational, non-judgemental language when communicating constraints helps people feel that their agency is respected and they have a sense of choice. Controlling language can lead to people feeling pressured to do things, thus leading to an external perceived locus of causality where people do not feel they own their actions (Van Petegem et al., 2015; Weinstein et al., 2020). Pressuring and guilt-, and anxiety-inducing language, such as telling people what they should or must do, makes people feel forced to do something, in the worst case triggering an ironic response where people refuse to obey to reassert their own agency. The chosen language should convey a sense of choice, collaboration, and possibility, thereby leaving the initiative with the person to take action (Lavergne et al., 2010; Moller et al., 2006). This is especially critical when the introduced guidelines concern issues over which citizens typically exert personal jurisdiction (Van Petegem et al., 2017). On the other hand, when urgent action is needed as is the case during a crisis, some inviting wording (e.g., "you might") may be perceived as too soft or unclear, opening the door for a climate of permissiveness (Aelterman et al., 2019). Thus, the attributed meaning to the language being used may also depend on the situation at hand, an issue in need of further investigation (e.g., Delrue et al., 2019).

Example of application in policy communication. In communicating voluntary guidelines and restrictions, choose words that support people's sense that they can do it because they see the value, rather than only because it is the rule or a "must". Intervention studies communicating constraints on people's behaviour have demonstrated that the same limits can be communicated in a more informational way or in a more controlling way using phrases such as "you must", "you have to", with the latter undermining participants' subsequent intrinsic motivation (Koestner et al., 1984). Accordingly, controlling messages such "You

must stay home to stop the spread of the virus" can awaken defiance in some individuals. More informational way of communicating the same limit would be: "By staying at home you can help stop the spread of the virus. To protect the vulnerable, we thus ask you to stay home". Instead of saying "You should wash hands thoroughly in order to deactivate the virus", a less controlling way of communicating the same message could be "Wash your hands – It is a simple and effective way of deactivating the virus". The importance of such language is likely particularly important for behaviours that must be sustained over time, rather than short-term or one time behaviours, for which controlling messaging can sometimes be equally effective if rationales are clear (e.g., Bradshaw et al., 2020).

Appeal to the aspirations, goals, and values of the people

Definition. Support desired behaviours by connecting them with what matters to people.

Rationale. If desired behaviours are connected to values and aspirations important to people, this makes executing them more voluntary and more probable that people actually do them (Ryan & Deci, 2017; Vansteenkiste et al., 2004). Thus, in communicating various behaviours, it is important to think how could they be tied in with some aspirations and values that are already important to people such that they become self-relevant (Pelletier & Sharp, 2008). In self-affirmation studies (see meta-analysis by Sweeney & Moyer, 2015), both values and kindness self-affirmation manipulations prior to reading health messages have been linked to increases in intentions, albeit not behaviour.

Example of application in policy communication. Talk about the value of protecting everyone, including vulnerable people you likely know or who might be in your social groups. People tend to value healthcare workers, thus one could remind people that "by staying at home, you are helping our front-line health workers". People want to help the sick and vulnerable people, thus one can remind them that social distancing is a gift to every vulnerable person.

Within necessary limits, provide choice on how to adhere to the rules

Definition. Even within constraints, indicate which choices people still have.

Rationale. While clear limits and constraints are important, it is possible to offer people choice within these limits on how they want to fulfil the requirements. Providing a menu of behavioural options from which people can choose how to adhere to the guidelines strengthens their sense of agency and autonomy even within the limits (Deci et al., 1994; Moller et al., 2006). There can be several alternative actions that all lead to the same goal:

adherence to a certain behavioural guideline. Highlighting these various actions in the form of a menu of options can help the people to see how they can make a self-endorsed choice as regards how to behave among the options available to them, while still adhering to the recommendations. This personal input promotes ownership and responsibility over the necessary behavioural change. However, careful consideration is needed with respect to the specific themes over which choice is conveyed as to avoid that a laisser-faire perception arises (see Aelterman et al., 2019).

Example of application in policy communication. Be clear about what kind of activities are still allowed that do not endanger the physical distancing measures, such as going outdoors for exercise, going for a walk in the forest or ordering take-away meals from favourite restaurants, so that people have a sense of choice over activities within the guidelines. Encourage on-line connectedness within social isolation, so that people feel they have a possibility to meet significant others.

Competence-supportive communication techniques

Provide concrete instructions, clear expectations and formulate collective goals to strive for

Definition. Offer people clear guidance on what behaviour is required, concrete instructions on how this behaviour is achieved, and which specific goals to strive for.

Rationale. To be able to adhere to the necessary guidelines, people need to know what exactly is required of them (Aitken et al., 2016; Mouratidis et al., 2013). Thus, clear, concrete guidelines are necessary. Ambiguous instructions lead people not knowing when they have been successful, lowering their sense of competence and motivation. A meta-analysis of goal setting as a behaviour change technique (Epton et al., 2017) concluded that goal setting has positive effects on changing behaviour, and that goals that are set by someone else are equally effective as goals that are self-set or collaboratively set. In a meta-analysis on physical activity (Knittle et al., 2018), interventions that included behavioural goal setting (irrespective of who set the goal), were linked to increases in physical activity motivation, compared to interventions that did not set a clear behavioural goal. Also, instructions on how to perform the behaviour have been linked to better outcomes in, e.g., complex interventions for obese adults with co-morbidities (Dombrowski et al., 2012).

Example of application in policy communication. The recommended behaviours need to be communicated in a clear, specific manner. Avoid ambiguous phrases open to different interpretations, such as “as much as possible”, or

"frequently", and instead, "X times a day". Define precisely what central words in recommendations, such as "gathering" or "practice hand hygiene" mean. Such more specific guidelines allow individuals to formulate implementation intentions, which increase the probability of adhering to the guidelines (Koestner et al., 2002).

Formulating concrete goals to strive for is also important. Attained goals boost citizens' collective efficacy and confidence and open the door to relaxations. To formulate such goals, critical parameters and associated thresholds to shift to different risk phases in the epidemic need to be transparently communicated.

Make sure the guidelines are formulated in a manner that the citizen understands what is expected of them. Ensure education and skill training: For example, circulate leaflets and online tutorials with clear step-by-step instructions on how to cleanse hands with a hand sanitiser, or wash hands using soap and warm water, or use, remove, and dispose of/wash face masks. Use co-design methods to ensure that these instructive materials are understandable by target groups, and sensitive to their educational needs.

Provide constructive, clear, and relevant feedback on how successful people have been in adherence to the measures

Definition. Provide relevant, tailored and timely feedback about how well people are doing and how their efforts have been progressing.

Rationale. Constructive, clear, and relevant feedback helps to make people feel a sense of competence, mastery and effectance in their actions, supporting their autonomous motivation to engage in them (Mabbe et al., 2018; Ryan & Deci, 2017), and offering them the chance to experience that they are making progress towards the goals. The feedback should be clear and accurate but non-judgemental. Providing feedback on performance or outcome of behaviour has been linked to larger effects in various interventions to change behaviour, for example, reductions in alcohol consumption (Black et al., 2016), overweight adolescents physical activity and healthy eating change (Samdal et al., 2017), and reducing inappropriate antibiotic prescribing (Crayton et al., 2020). Some research indicates that it is feeling good rather than bad about the progress that produces stronger motivation (J. P. Reynolds et al., 2018), thus supporting SDT's assumption of the importance for fostering the sense of competence, by providing encouraging feedback (i.e., celebrating even small successes, rather than scolding people for not progressing enough). Furthermore, persuasion research has demonstrated that communicating descriptive norms about how well *others* are complying with the rules significantly increases the likelihood that individuals will adhere to the same rules (Cialdini, 2003; Cialdini & Goldstein, 2004). Thus, when certain policies have high approval or compliance ratings, communicating these ratings can further reinforce the compliance with them.

Example of application in policy communication. Communicating statistics about the success of social distancing measures by measuring how much emptier streets are, or how the measures have helped to flatten the curve as regards infections, or decreased the number of ICU patients is motivating, demonstrating to people that their actions have been effective and made a difference. Communicating what would likely have happened if people had not complied with the measures can highlight how lives have been saved by people's actions. It can also be more effective to share positive examples of how various people adhere to the measures rather than zooming on those that are defiant.

Address key obstacles for change

Definition. Identify what the likely barriers that people may have to behaviour change, and provide instructions on how to overcome them.

Rationale. Identifying the likely barriers and providing tools for overcoming them increases people's confidence and reinforces their sense of competence in the face of obstacles (Ryan & Deci, 2017; Ryan et al., 2008), while also providing concrete resources people can utilise in making the necessary changes. According to a systematic review, planning how to cope with anticipated barriers is particularly effective in health-related behaviour change, when people are supported in the process of forming such plans (Kwasnicka et al., 2013). Other approaches to behavioural change, such as community-based social marketing has similarly proposed that identifying barriers for change and designing ways to overcome them is a crucial step for public campaigns to successfully change people's behaviour (Kennedy, 2010; Mckenzie-Mohr, 2000).

Example of application in policy context. In promoting the use of face masks in the public, e.g., in the shops, policy makers may also support and fund providing people with masks when entering the shop. For hand hygiene, people may have difficulty remembering to clean their hands at right times, so they can be provided with memory aids or skill training for automatic habits, to overcome the memory issue. For some people, social distancing may be difficult due to loneliness. People could be provided with instructions on how to stay connected using the phone or computers.

Relatedness-supportive communication techniques

Acknowledge people's own perspectives, feelings and potential conflicts

Definition. Demonstrate that you recognise the barriers and obstacles people may have to engaging in key behaviours to convey empathy to them.

Rationale. Following the rules might have significant downsides for the people – not being able to see their loved ones or take care of their ageing parents. Accordingly, it is important to provide statements of empathy and show that one is acknowledging people's perspectives, and the potential feelings of distress and negative affect that they might be experiencing (Deci et al., 1994; Ryan & Deci, 2017). By sincerely caring about people's attitudes, thoughts, and feelings, one creates an accepting and warm social environment. Through acknowledging the potential conflicts and distresses of people the policy maker can make people feel that they have been heard and their perspective on the matter has been taken into account, which fosters more autonomous motivation to adhere to the measures (Pavey et al., 2012).

Example of application in policy communication. Clearly acknowledge economic hardships, and sacrifices many people are accepting as side effects of adhering to the guidelines. Acknowledging people's feelings such as confusion in the face of contrasting information, fear and anxiety in the face of the pandemic, financial difficulties, caretaking obligations that become hard to fulfil due to the social distancing measures.

Emphasise and facilitate shared identity and common fate

Definition. Building a sense of shared identity and common fate among the people affected by the crisis.

Rationale. When people have a strong sense of shared identity and the common fate they are more prone to focus on helping each other and working towards common goals (Drury, 2018; Drury et al., 2016). When people's social identities are active, they see themselves "in terms of the values and beliefs that define the group and act in line with relevant group norm" (K. J. Reynolds et al., 2020). Facilitating this sense of shared identity in communication is important to strengthen people's willingness to look at how they can play their own part in solving the crisis. A systematic review and meta-analysis of goal setting as a behaviour change technique (Epton et al., 2017) found that *group goals* are more effective than individually set goals.

Example of application in policy communication. Emphasise that we are all in this together and how the crisis touches each of us. Facilitate a sense of shared identity in communication and emphasise stories that highlight how we are in this together, how the crisis affects various groups within the society, and how people within each group are working together to help each other. Draw people's attention to prosocial acts and acts of solidarity in society (e.g., daily hand clapping for caregivers; volunteers who provide help), rather than dwell on examples of deviant or antisocial behaviour (e.g., breaking the rules).

Build trust through transparent and open communication

Definition. Communicating what is known and what is not known in a timely and transparent way to the public.

Rationale. To ensure that people follow the guidelines of the policy-makers, it is crucial that people trust them. Relatedness is dependent on trust, and research on what makes authorities and institutions seem legitimate and trustworthy has demonstrated how procedural fairness builds such trust, increasing people's willingness to defer to the decisions and rules proposed by these authorities and institutions (Trinkner & Cohn, 2014; Tyler, 2006). Open communication, that helps people to understand what is happening and why, has in turn been shown to build such trust towards the authorities (Kernan & Hanges, 2002). Being transparent and open in one's communication is thus argued to be a crucial way of building trust in crises (Carter et al., 2014; Drury et al., 2019). It also helps to counter speculations and rumours that otherwise easily occupy the information vacuum and undermine a sense of trust.

Example of application in policy communication. Be transparent about risks and timelines, and uncertainties in the current scientific knowledge. Publish models, estimations, assumptions and data upon which the government is building the strategy, instead of keeping public in the dark.

Identify trusted messengers to mediate the guidelines to various groups

Definition. Use people who can bring the message in a trustworthy way and inspire the perceived legitimacy of recommendations and guidelines within various groups and communities.

Rationale. Persuasion research has demonstrated that the credibility of the messenger has a significant impact on the persuasiveness of the message and subsequent behavioural change (Jones et al., 2003; Wu & Shaffer, 1987). A key dimension of such credibility is how much people feel that they can relate with the messenger: People are more persuaded by messages from fellow ingroup members and those they identify with (Carter et al., 2013; Mackie et al., 1990). For example, people with strong ethnic identities tend to see spokespersons from the same ethnic group as more credible and trustworthy (Morimoto & La Ferle, 2008). The sense of relatedness people feel towards the messenger can thus be a crucial factor in how effective the communication of various guidelines will be in driving behavioural change. Accordingly, to reach various subgroups within society, like certain ethnic minorities or adolescents not trusting the government, it is important to identify who are trusted members within those groups and ask them to convey the message to their own group.

Example of application in policy communication. Use health professionals to communicate health guidelines rather than politicians, and for various subgroups, try to identify trusted people within that community to act as messengers. For example, teenagers might be prone to ignore the physical distancing measures, feeling that given they are not the risk group, the measures do not apply to them. Youtubers and other influencers within that group could help bring the message about the importance of these measures also to them. In student populations, medical students could both encourage their peers to adhere to the measures and model protective behaviour.

Appeal to people's natural willingness to help each other

Definition. Appealing to people's motivation to help other people.

Rationale. People typically have a natural willingness to help others in need (Batson et al., 2009; Schroeder & Graziano, 2015; Warneken & Tomasello, 2015), and research has shown that sometimes messages that ask people to help others can be more effective than messages that ask them to help themselves (Grant & Hofmann, 2011; Jordan et al., 2020).

Example of application in policy communication. Emphasise how we can help others, especially vulnerable risk groups, even by simple steps like staying home. When asking people to wash hands, instead of emphasising this as a measure of not catching the virus oneself, emphasise that they are helping not spread the virus to others, especially to vulnerable groups.

Discussion

In this article, we argue that variations in styles of communicating policy decisions can have a significant impact on people's voluntary motivation and behaviour change, and through that on the effectiveness of the governmental guidelines to actually influence behaviour. Accordingly, we offer a number of communication principles that aim to identify ways to promote more autonomous forms of motivation and accordingly more voluntary and sustainable adherence to necessary guidelines. The proposed communication principles are based on self-determination theory, a prominent social psychological theory (Deci & Ryan, 2012), that has demonstrated how there are qualitative differences in people's motivational styles, and how the interpersonal contexts and ways of interactions have a deep influence on how people are motivated to engage in certain behaviours. Some of the guidelines additionally draw on social identity approach (Drury, 2018; Drury et al., 2019), which can complement especially the relatedness-supporting guidelines of SDT.

In addition to offering SDT-based guidelines for enticing voluntary adherence, in the present article, we integrate elements of social identity theory with

SDT. While some might see social identity theory and self-determination theory as opposed to each other in the sense that the former concentrates on the social nature of human beings, and the latter seemingly focuses only on the "self", we see no such contradiction. This is because while SDT indeed is a theory of human nature that sees humans as self-motivated and self-regulated instead of merely reacting to external stimuli (Deci & Ryan, 2012; Ryan & Deci, 2017), the nature of the "self" in SDT is by definition inter-subjective and social. The interests, needs, and motivations of the "self" are seen to emerge from one's interaction with one's social environment, and the theory has from the beginning focused on examining how social environments facilitate or undermine various forms of motivation (Deci & Ryan, 1980). Even the need for autonomy, the emphasis on which is sometimes mistakenly taken as a sign of the individualistic nature of the theory, is interpersonal in the sense of being deeply dependent on how much social environment supports or thwarts it (Vansteenkiste et al., 2020). Furthermore, in being about the volitional endorsement of one's actions, autonomy is compatible with more collectivistic cultural values as one can volitionally decide to be part of and endorse the goals and values of a group (Chirkov et al., 2003). While SDT has thus far given more emphasis to examining manifestations of relatedness in close relationships (La Guardia et al., 2000), social identity theory can complement SDT in offering an account of the mechanisms and ways through which relatedness towards larger groups is manifested, developed, and preserved.

Social identity theory, in its focus on shared identity and regard for the common good can also be particularly relevant in contexts where other-regarding behaviour is required. While research stemming from SDT has demonstrated how prosocial behaviour is typically need-satisfying (Martela & Ryan, 2016; Weinstein & Ryan, 2010) and discussed how satisfaction of the needs can make humans more prosocial (Ryan & Hawley, 2017), the SIT can complement these insights about the roots of human prosocial motivations. Thus, we see that SDT and SIT are not competing theories but rather can complement each other when applied to practical contexts, such as when offering guidelines on how to best communicate in order to enhance voluntary compliance.

The current state of evidence behind the principles

As highlighted already in the introduction, the proposed principles are grounded in the existing evidence base, which still is premature in many ways, especially as regards the direct applicability of these principles mainly researched in other context to the public communication and crisis response situations. Accordingly, the ways we propose that these principles should be applied to the present context and the examples we provide should be treated as preliminary and the translation of these principles needs to carefully take the context of the application into account. Thus, it is clear that more

research is needed both as regards applying the proposed principles to policy contexts, as well as testing the effectiveness of individual proposed principles. While some have argued that psychology is not yet a crisis-ready discipline (IJzerman et al., 2020), we see that given the urgency of the need for effective crisis response, psychologists need to draw from the best available evidence, acknowledging its shortcomings, to provide guidance. We believe that communication guidelines based on scientific theories tested in other contexts are better than communication guidelines not having any scientific basis at all. Thus, we have aimed to propose the principles that are most likely effective in this situation, given the currently available evidence for their effectiveness in other contexts, while acknowledging the need for future research to test and further refine these principles.

Furthermore, to expand the scientific grounding of the proposed principles, we have drawn from research in other traditions, not just SDT, when support for some individual principles has existed in other research traditions. In fact, several of the principles are not only recommended by SDT but also other theoretical traditions such as SIT, research on persuasion, and research on community-based social marketing techniques, research on procedural fairness, and motivational interviewing. This, of course, should be seen as a strength of these principles: Several relatively independent research traditions converge on similar principles testifies to their importance for effective communication and behavioural change. Thus, for most principles, we do not claim that they would be exclusively SDT-based, as they may also be derived or justified through other theoretical lenses. Nevertheless, all are principles that can also be argued for based on SDT and the overall structuring of the principles is also based on SDT.

It should be noted that the investigation of "active ingredients" of behaviour change interventions is in its infancy. Although we have cited both original empirical studies as well as meta-analytic evidence for the principles above, there are major gaps in the current literature. For example, meta-analyses and meta-regressions with codings of intervention techniques may miss key aspects of active and comparator interventions due to poor reporting of content (e.g., Bruin et al., 2020). On the other hand, the most used taxonomy of behaviour change techniques can be well argued to exclude important candidate techniques, which have been included in some more recent taxonomies (e.g., Teixeira et al., 2020) or compendiums (Knittle et al., 2020). However, the meta-analytic evidence using a more comprehensive set of techniques has yet to accumulate. Fidelity of interventions is not necessarily captured in meta-analyses (Toomey et al., 2020). Finally, many behaviour change techniques produce their effects working synergistically, making the isolation of unique effects of individual techniques hard, and calling for research focusing on how the combinations of various techniques work together. Indeed, a meta-analysis using ambitious methods to combine

the effects of various BCTs showed most and least promising combinations (Dusseldorp et al., 2014). As Gillison et al. (2019) conclude "a need supportive environment requires the combination of multiple co-acting techniques". Accordingly, both macro-interventions, involving the simultaneous manipulation of different techniques, as well as experiments, involving a deconstruction of these interventions to isolate and test the effectiveness of different techniques, are useful to gain a more holistic view of the effectiveness of individual techniques and the synergistic effectiveness of combining them (Vansteenkiste et al., 2012). We encourage future researchers to investigate mechanisms of action of various social psychological interventions, with appropriate attention to intervention fidelity (Toomey et al., 2020), and are optimistic as more conceptual frameworks are becoming available (e.g., Knittle et al., 2020; Teixeira et al., 2020).

Limitations

A valid question is whether these guidelines generalise to various cultural contexts or whether they apply to only Western contexts, where a significant body of the empirical work cited has been conducted. Studies have shown that the need for autonomy and autonomous integration of cultural norms is important in both individualistic Western countries and more collectivistic Eastern countries (B. Chen et al., 2015; Chirkov et al., 2003; Slemp et al., 2018) providing support for the generalisability of the key theoretical propositions of SDT. Thus, although more research is needed, it seems that the proposed principles could have validity in a large number of different countries.

Finally, it is important to emphasise that individual communication efforts by the policy-makers do not take place in isolation, but rather are interpreted within the context of how government and policy-makers are more generally perceived. Indeed, also in the COVID-19 epidemic, there is some indication that institutional trust is linked to mortality, and change rate in mortality (Oksanen et al., 2020). Governments and policy advocates vary significantly in their perceived legitimacy, inclusiveness, trustworthiness, consistency of messaging, and other factors that may moderate the effectiveness of any given strategy. For example, if the mistrust towards the government is deep, even well-constructed communication might be viewed with suspicion. On the other hand, if trust in government is high, and the rationale clear, they might be able to invoke volitional compliance with less communication efforts (cf. Bradshaw et al., 2020; Lavergne et al., 2010). Thus, the motivational effects of individual communication efforts in policy contexts might be moderated by how people more generally perceive the communicator, and this should be taken into account. When feasible, the government can support the voluntary motivation of the citizens also through involving them in the designing process of the guidelines. When

people feel that their suggestions and concerns have been heard, and that their insights are utilised in the design process, this can significantly foster their willing compliance to the guidelines they feel they have been involved in designing. Although co-designing is not easy to implement on a national level, ways of sourcing insights from citizens should be considered as a means of both enhancing the motivation of citizens and being able to design guidelines better tailored for the needs of the citizens.

Furthermore, motivation is, of course, not the only factor mattering to whether people adhere to guidelines, many highly motivated individuals might simply lack the material means to follow through on the guidelines: If one cannot afford a face mask, one cannot use one; if one's work does not allow for remote work, one has to be physically present; if public transportation is the only option for transportation, one has to use it, and so forth. Accordingly, the economic situation of the individuals and various material concerns have a significant impact on how well people are able to adhere to the guidelines. While the focus of the present article is on how to strengthen motivation for the desired behaviour, mere increase in motivation will not overcome the material obstacles but they need to be addressed through policies such as making the right behaviour more affordable for individuals.

Conclusion

A crucial part of a successful national response to a crisis like a pandemic is about being able to communicate the required rules and guidelines to the citizens in a way that leads to voluntary behaviour change. To succeed, policy-makers thus need to know how to communicate in a way that supports the autonomous motivation of the citizens as well as the sense of community in mitigation efforts such that citizens voluntarily take responsibility for actions that protect themselves, close others, and the society at large, and more willingly accept reasoned restrictions of their choices and behaviours. Herein, building on the extensive research and controlled trials conducted within self-determination theory, we offered a number of guidelines on how to effectively support such autonomous motivation and thus increase the likelihood that people are committed to engaging in, and maintaining, the necessary behaviours over time.

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