



## The Behavioural Insights Team Working Paper Series

# A randomised controlled trial to measure the impact of supportive text messages on attendance and engagement with treatment among Improving Access to Psychological Therapies (IAPT) patients

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## Disclaimers/ Notes

- Author contributions: **Victoria Flahavan**: Conceptualisation, Investigation, Project Administration, Writing - Original Draft; **Edward Flahavan**: Methodology, Formal analysis, Data Curation, Writing - Original Draft; **Alex Gyani**: Writing - Review & Editing; **Michael Hallsworth**: Conceptualisation, Writing - Original Draft, Supervision.
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- The views expressed herein are those of the authors and do not necessarily reflect the views of the Behavioural Insights Team
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## Abstract

In 2019/20 1.7 million people were referred into the Improving Access to Psychological Therapies (IAPT) service in England. Of these, one in three did not complete a course of treatment (defined as attending two or more treatment appointments). One reason for dropout is long wait times with limited communication. Our randomised controlled trial (RCT) including 17,000 patients found that patients who received text message updates on the effort being exerted by those providing the IAPT service were 1.7 percentage points ( $p = 0.029$ , 95% CI: 0.06ppts to 2.7ppts) more likely to complete a course of treatment (defined as attending two or more treatment appointments), compared with usual care. This is a relative improvement of 3.5% ( $p = 0.029$ , 95% CI: 0.01% to 5.5%). The patients in the treatment group also attended more appointments on average. If scaled up, this low-cost intervention could lead to many additional patients completing treatment in IAPT, thereby substantially improving the effectiveness of the service. These results are also relevant to any service that is attempting to reduce its rate of drop-outs and missed appointments.

### Keywords:

- Randomised controlled trial
- Cost effectiveness
- Service delivery
- Psychological treatment

# Introduction

## Background - Scientific background and explanation of rationale

The Improving Access to Psychological Therapies (IAPT) service was announced on World Mental Health Day in 2007 by the UK government. It is a national primary mental health care service in the UK. It was set up to provide evidence-based psychological therapies for common mental health disorders (Clark, 2011). In 2019/20 1.7 million people were referred to IAPT. Of these, one in three did not complete a course of treatment (defined as attending two or more treatment appointments) (NHS Digital, 2020). Drop-out is not unique to IAPT. It is an issue in many clinical services, such as addiction treatment (Brorson et al., 2013), treatment for borderline personality disorder (Gaglia et al., 2013) and community psychiatric treatment services (Henzen et al. 2016). There are good reasons why some people referred (or who refer themselves) do not complete a course of treatment. For example, some may be referred to other services, decide to use private healthcare, or experience remission without treatment. Nevertheless, it is likely that there are also many people who do not complete treatment even though it would benefit them (Clark et al., 2018).

Treatment dropouts also cause wider issues. If patients do not attend an appointment, this means others cannot start their treatment instead. Longer wait times also increase the likelihood that people on the waiting list do not attend their first appointment (Davis et al., 2020). Non-attendance can therefore result in more non-attendance. IAPT services have made great progress in reducing waiting times, with nearly 90% of referrals starting treatment within 6 weeks, but there is significant variation across services and many people can still wait months to be seen (NHS Digital, 2018). Usually the only communication during this waiting period is a standard letter and/or text message stating the date and time of the appointments.

Although there are obstacles to eliminating long wait times completely, their negative effects on drop out could be mitigated. Marshall et al. (2016) highlight the importance of personal contact in IAPT services. Their interviews found that the waiting process for IAPT services affects whether patients attend their appointments or not. Some respondents reported feeling neglected and/or frustrated by waiting, and by the lack of contact from services. Others described wanting more person-to-person contact while on the waiting list, rather than formal written letters. The authors conclude that the lack of contact or information from the services about the wait was a factor contributing to nonattendance, as well as the length of the wait itself.

Previous studies have identified role induction and motivational interviewing as two methods for structuring this kind of contact with patients. Role induction involves speaking to patients to ensure that they have an accurate idea of what treatment will involve, while motivational interviewing aims to identify and resolve barriers to completing treatment. While both have been found to be effective in reducing dropout (Ogrodniczuk, Joyce, & Piper, 2005; Oldham et al., 2012), they either require initial engagement from the patient or a discussion between

staff at the treatment services and the patient. Therefore, these interventions would require a significant investment to implement.

Contacting people by text message has been seen as a promising alternative approach. This medium costs much less than face-to-face or telephone contact and can be delivered prior to treatment initiation (Schwebel & Larimer, 2018). Text messages containing the time, date and location of an appointment are routinely used as reminders to improve attendance (Orr & King, 2015; Head et al., 2013; Robothan et al., 2016). This simple information provides more contact with patients, and is already used in many IAPT services. However, simple date and time information does not address the concerns that Marshall et al. (2016)'s participants described, as it does not provide more regular and informal contact.

There is emerging evidence that an 'operational transparency' approach can fulfil such needs. The theory of operational transparency posits that providing people with information about how a process is working increases their engagement with that process (Buell, Kim & Tsay, 2017). This is particularly true if the information displays that the people providing the service are expending effort to ensure that such progress is made (a feature that distinguishes operational transparency from most feedback interventions). This effort creates a sense of reciprocity. If the service is expending effort, then this creates a perceived obligation to the service user. Therefore, in the context of IAPT, making transparent the effort being expended to schedule an IAPT appointment may reduce dropout.

Many organisations use operational transparency, but evaluations are still relatively rare. One study found that customers in a dining hall were more satisfied with their meal when they could see the chefs preparing their food (Buell, Kim & Tsay, 2017). Another study carried out in Boston, Massachusetts concluded that residents' trust in government increased when the city openly shared information on its ongoing efforts to address problems, such as potholes and broken street lamps (Buell, Porter & Norton, 2018).

There is indicative evidence that operational transparency could be effective in clinical settings. For example, the UK's Design Council, has conducted pilots on the effects of displaying a patient's progress through Accident and Emergency departments as a way to reduce patient aggression (Design Council, 2014). However, this was introduced alongside a raft of other measures and was not evaluated using a robust methodology.

Given this context, there is an opportunity to test whether operational transparency can be used in clinical settings to reduce treatment drop out in IAPT.

## Objectives - Specific objectives or hypotheses

Based on the research summarised above, we theorise that some people referred to IAPT may disengage with treatment because of lack of contact during the waiting period, specifically the period of time between referral and second treatment appointment. Providing supportive text messages - including information on the activity that is taking place during the waiting period, in line with the theory of operational transparency - may increase patient engagement with the IAPT service. The objective of this research therefore was to test a

non-clinical text message intervention that provided supportive messages and updates to patients on IAPT waiting lists.

Our hypothesis was that patients who were randomly allocated to be sent these supportive text messages - in addition to usual care and the communication that involved - would be more likely to complete treatment (attend two or more appointments) than the patients receiving usual care alone. In this case usual care is the existing communications from the IAPT service.

## Ethical approval

Ethical approval was obtained from a Research Ethics Committee of the NHS National Research Ethics Service (NHS REC 18/YH/0092). Individual informed consent for participation was waived, as approved by the Committee, but we purposefully only included patients who had already consented to receive text messages from their provider.

## Method

### Trial Design

In this study patients in participating IAPT services were individually randomised to one of two arms: a treatment arm where patients received supportive SMS messages in addition to appointment reminder SMS messages, and a control arm which received only appointment reminder SMS messages. Patients were allocated to either arm in equal proportions.

### Changes to trial design

Patients in both the control and treatment groups inadvertently received supportive text messages at one service. This service was dropped from the final analysis. There were no other changes to the trial design during the study.

The trial was pre-registered on ISRCTN (trial number 73424656).

### Participants

Eligible participants were all new referrals into participating IAPT services during the trial recruitment period (23rd April 2018 to 23rd August 2018) who had consented to receive SMS message communication from their provider. Patients opt-in to receiving SMS communication from services. All eligible patients were then allocated to either treatment or control groups.

## Study settings

The study was implemented by seven IAPT services from around England:

- Outlook Southwest (Cornwall and the Scilly Isles)
- Talking Changes (Durham)
- Talk Liverpool (Mersey)
- Sutton Uplift (Sutton)
- Talking Therapies (Somerset)
- Talking Matters Northumberland (Northumberland)
- Talk Wandsworth (Wandsworth)

## Interventions

Figure 1 sets out the timing, rules and the content of the text messages sent to patients in the treatment group. We designed a series of nine text messages to be sent to patients between referral to an IAPT service and the date of the second appointment being set. The text messages were sent in addition to business as usual communications (see more detail below).

In line with the literature outlined above, the text messages were designed to provide regular contact to patients as they waited at various stages in the process, and to reassure patients of the effort being exerted to arrange their appointment. Along with these elements of operational transparency, we included a number of other features in the text messages, including: (1) a reassuring, supportive and more informal tone; (2) explicit apologies for extended waiting periods; and (3) clear information on when to expect a further text message update if an appointment still has not been set.

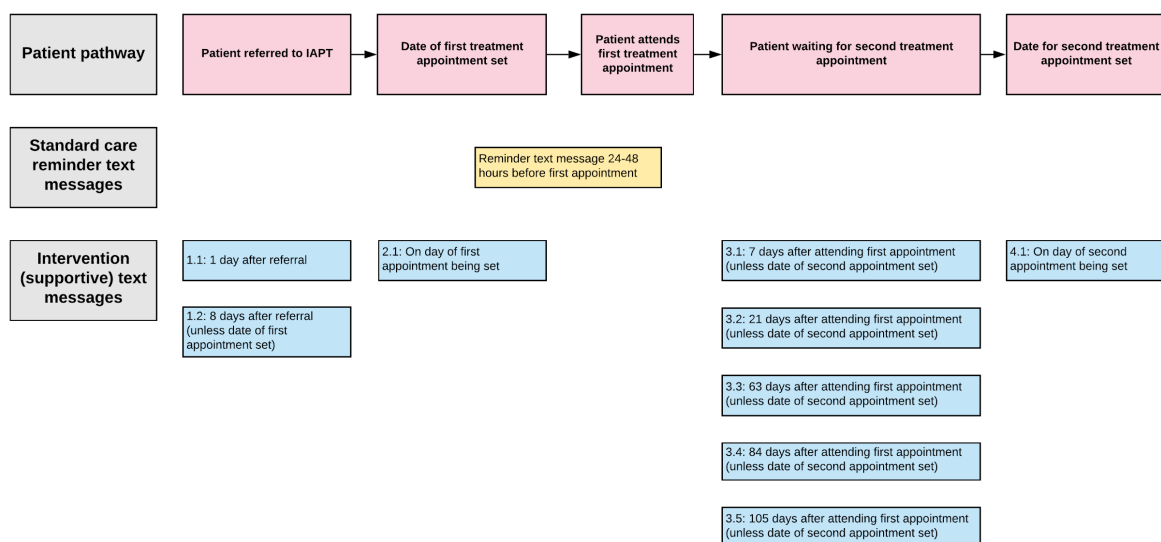
The study team designed the wording of the messages in collaboration with a psychiatrist and staff from the participating IAPT services (including clinical psychologists) and sought advice and comments from IAPT patients.

The timing and rules for the text messages were designed with Mayden, the company which owns and runs iaptus, the patient management system used by 60% of IAPT services in England. Most of the text messages were scheduled to be sent between the first and second treatment appointment (blue boxes in figure 1) because initial data exploration showed that this was the longest waiting period, with patients waiting on average roughly 5 weeks. Patients received certain messages depending on their stage in the process and how long they had been waiting at each stage.

Not every service used all the text message templates due to slight variations in the process of new referrals between services. Two services required referred individuals to actively contact the service to book an appointment, and so our first text message (“We’ll be in touch to book your first appointment shortly”) was not appropriate. In this case, the template was removed for this service and patients were only sent the remainder of the series. We do not believe that these slight variations affect the overall conclusions from the study.

Patients in the control group who attended a first treatment appointment will have received just the text message appointment reminder (as part of standard care) by the time of their second appointment being set. In comparison, patients in the treatment group will have received an average of two supportive text messages in addition to the standard reminder message at this point.

Fig 1: Timing of text messages along the patient pathway.



## Outcomes

The primary outcome measure was attendance at two or more treatment appointments. This was chosen as the primary outcome because the intervention focuses on the period between referral and second treatment appointment and because IAPT services define two or more appointments as completion of treatment.

Secondary outcome measures were:

- a patient having an unscheduled dropout from treatment;
- a patient successfully completing their full treatment;
- mental health outcomes assessed using the PHQ-9 (Kroenke, Spitzer, & Williams, 2001) and/or the GAD-7 (Spitzer, Kroenke, & Williams, 2006) at the first and the last appointment they were collected.



## Changes to outcomes

The primary and secondary outcomes measured were the same as those set out in the trial pre-registration. To measure engagement with treatment we added an exploratory analysis testing the hypothesis that patients attended more treatment appointments on average. Treatment appointments are defined as appointments classified as “Treatment” or “Assessment and treatment”.

## Sample size

The sample size for this study was determined using power calculations based on the primary outcome measure of completion of two treatment appointments. Historical data from participating services indicated that roughly 45% of patients who were referred to IAPT complete two treatment appointments. A total estimated sample size of 16,000 powered the study to detect a 2.2 percentage point difference (Cohen's  $h = 0.05$ ) with 80% power at the 5% significance level. We selected a small minimum detectable effect size based on the effect sizes seen in similar interventions, such as the effect of changes to wording of SMS reminder messages on hospital appointment attendance (Hallsworth et al., 2015).

## Interim analyses and stopping guidelines

During the study we reviewed the data 5 times. The first two reviews were to ensure the correct data was being collected and the trial was being implemented. Subsequent reviews of the data assessed to see whether or not the required sample size had been reached. No outcomes analysis was undertaken.

## Randomisation sequence generation

During the trial period, patients referred to participating services who had consented to receive SMS messages from the service were randomly allocated to the control or treatment condition. Randomisation was implemented in Mayden's iaptus system using an SQL random number generator. There was no blocking or stratification in the randomisation procedure. Balance checks were conducted to ensure balanced allocation to the treatment and control groups. We found no evidence of imbalance; this analysis is reported in section 15 below.

## Randomisation: allocation concealment mechanism

Randomisation was implemented within the Mayden IAPTus system by an automated function. This was carried out independently of the clinical or administrative staff in services. While administrative staff in services *could* have checked the patient records to see whether a patient was in the treatment or control group, we do not have any reason to believe they would have done this and did not receive any reports to suggest that this was the case. As most messages were sent prior to face-to-face contact with the service or clinicians, even if

staff were aware of their condition, this knowledge would not be able to affect attendance at patients' first appointment under standard operating procedures.

## Randomisation: implementation

Administrative staff in the IAPT services scheduled the text messages in bulk to the correct patients using populated templates saved for each service using automated filters.

## Blinding

As described in section 9 above, administrative and clinical staff in services would not be aware of the allocation of individual patients.

## Similarity of interventions

The control group received standard care; the treatment group received additional supportive text messaging, in addition to standard care. Details of the messages sent to the treatment group are described in section 5 above. Standard care in this trial is the communication between a service and a new patient between referral and the patient's second treatment appointment. While standard care varied from service to service, it typically included: a telephone call or letter after referral to book the first appointment, a letter confirming the date of each appointment, and an SMS reminder message 24-48 hours in advance of each appointment. Three services also sent email reminders in advance of appointments and one of the services made weekly phone calls to medium and high risk patients while on waiting lists. Full details of standard care across participating services are included in Appendix A.

## Statistical methods

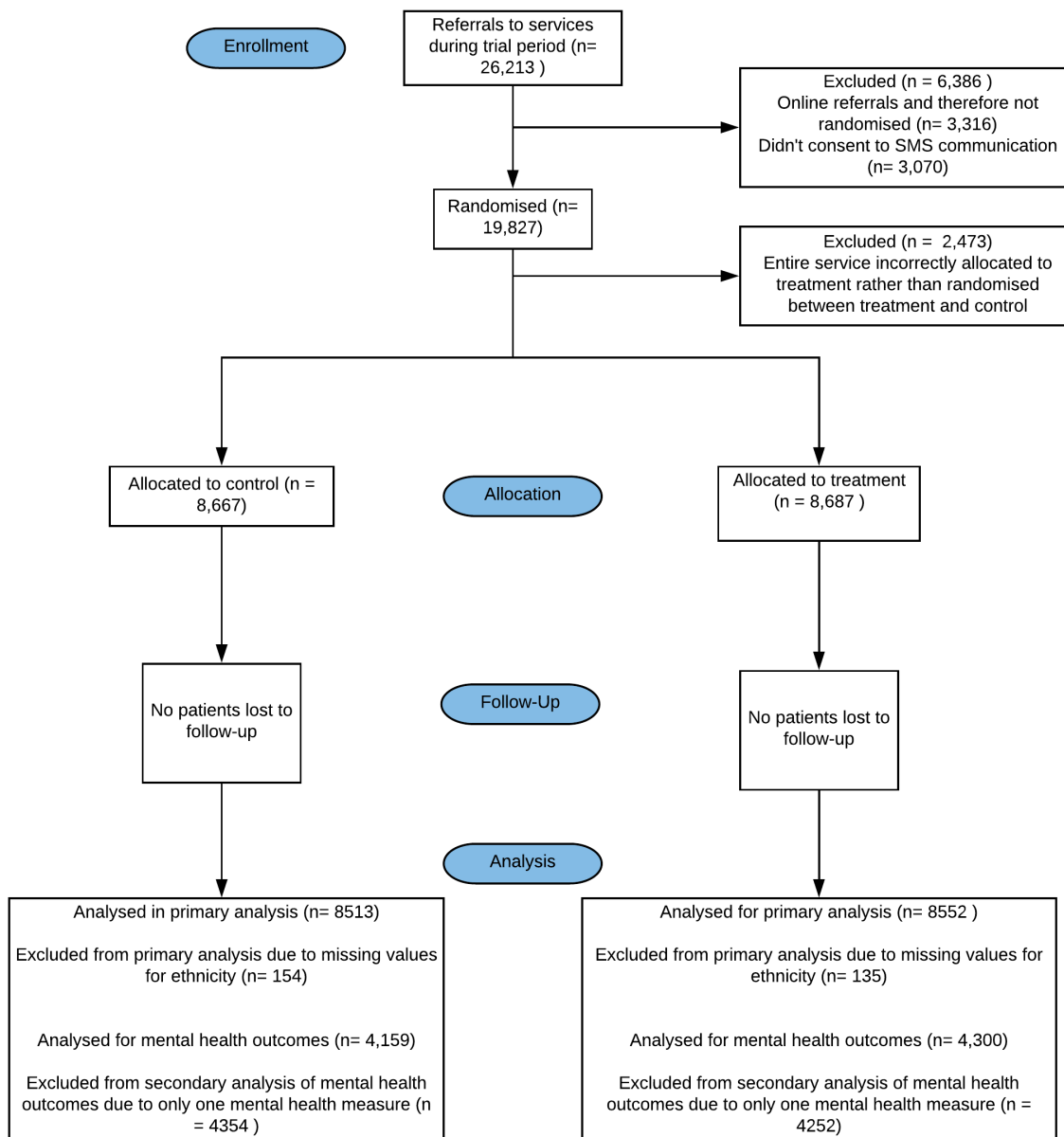
The primary and secondary outcomes were all analysed on an intent-to-treat basis. To test our hypotheses we used an OLS regression model including fixed effects for treatment, service, gender, age and source of referral (self referral, GP or other). We used this to assess whether or not the intervention improved outcomes. OLS was used for the sake of interpretability and we ran logistic regressions as a robustness check.

# Results

## CONSORT diagram describing participant flow and sample sizes

Figure 2 below describes the participant flow and sample sizes.

Fig 2. Consort diagram describing participant flow and sample sizes



## Losses and exclusions

Figure 2 outlines the losses and exclusions in this trial. Of the 26,213 total referrals to the services over the full trial period, 6,386 were excluded prior to randomisation because they were either online referrals or did not consent to receive SMS. Of those who were allocated to treatment or control, a small number were excluded from primary analysis due to missing values for ethnicity (289 participants), and a number were excluded from secondary analysis of mental health outcomes due to there only being one mental health measure collected (8,606 participants).

The entire data for one of the services (Talking Matters Northumberland) was removed from the analysis because all patients were inadvertently allocated to the treatment group for the entire trial period.

## Recruitment

Participants were recruited into the trial between 23rd April 2018 and 23rd August 2018.

The final text messages were sent on the 9th of November 2018. The final outcome data was collected on 6th December 2018. Therefore patient outcomes were tracked from referral until 6<sup>th</sup> December 2018 or until discharge from the service (whichever was sooner).

## Reason for stopping trial

The trial was stopped when the desired sample size had been reached.

## Baseline data

Table 1 below shows the baseline characteristics of patients in the control and treatment groups, along with the p-values for balance checks conducted to check for any imbalance in the randomisation.

Table 1. Participant characteristics at baseline

	<b>Control (n = 8,667)</b>	<b>Treatment (n= 8,687)</b>	<b>P-value</b>
<b>Gender</b>			
Female	5488 (63.3%)	5510 (63.4%)	0.834
Male	3176 (36.7%)	3172 (36.6%)	0.867
<b>Age category</b>			
Up to 30 years	3598 (41.5%)	3544 (40.8%)	0.495
31 to 50 years	3461 (39.9%)	3518 (40.4%)	0.891
50 years plus	1608 (18.6%)	1625 (18.7%)	0.350
<b>Ethnicity</b>			
White British	7273 (83.9%)	7321 (84.3%)	0.691
Other	1240 (14.3%)	1231 (14.2%)	0.750
Not specified	154 (1.8%)	135 (1.5%)	

## Numbers analysed

For the primary analysis and the secondary analysis of dropout 17,065 patients were included (289 patients were excluded due to missing values for ethnicity). In the secondary analysis of mental health outcomes only patients who had at least two observations of a GAD7 or PHQ9 were included, which restricted this analysis to 8,606 patients.

## Outcomes and estimation

### Patients attending two or more treatment appointments

Patients who received the supportive text messages were 1.7 percentage points ( $p = 0.029$ , 95% CI: 0.06ppts to 2.7ppts) more likely to complete a course of treatment (attend two or more treatment appointments) compared with patients who received the standard communication from the service. This is a relative improvement of 3.5% ( $p = 0.029$ , 95% CI: 0.01% to 5.5%). These results show the additional impact of the supportive text messages, beyond standard messages sent by services. For robustness, we also run a logistic regression the statistical significance of which is still robust ( $p = 0.029$ ).

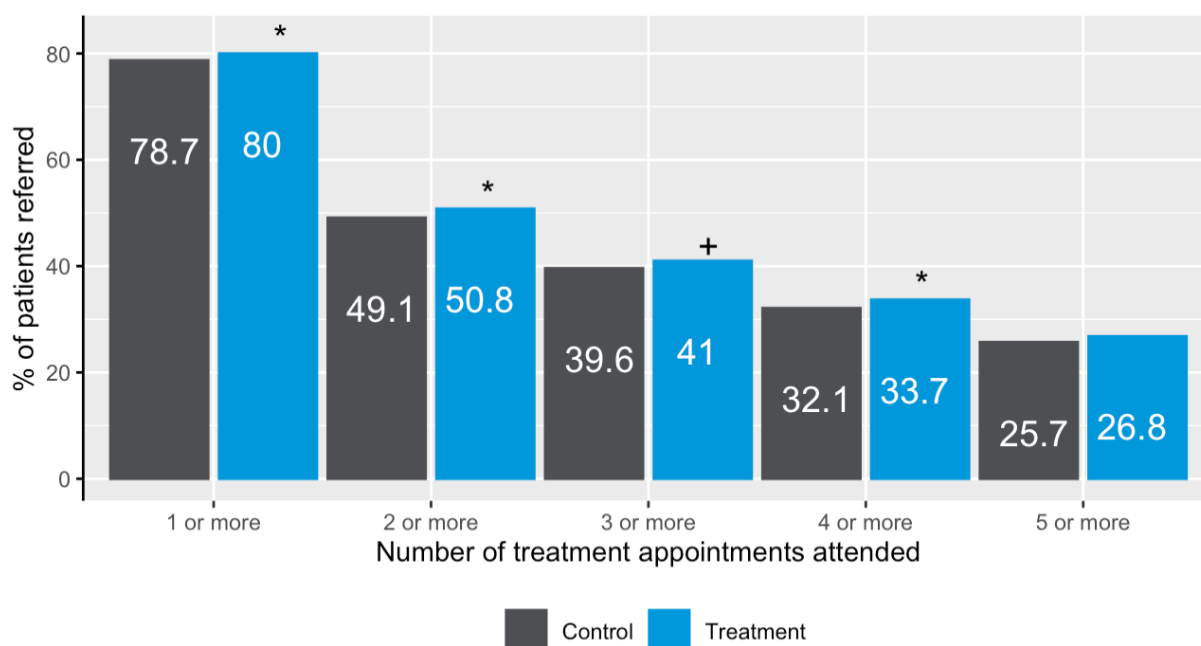
Table 2: OLS regression table for primary outcome of patient attending two or more treatment appointments

	Outcome: Patient attended two or more treatment appointments		
	1. OLS with no covariates	2. OLS controlling for services	3. OLS controlling for services and available patient characteristics
Treatment	0.017* (0.008)	0.016* (0.008)	0.017* (0.008)
Service: Durham		0.029* (0.012)	0.040** (0.012)
Service: Liverpool		-0.070** (0.012)	-0.062** (0.012)
Service: Sutton and Merton		0.104** (0.015)	0.118** (0.016)
Service: Somerset		-0.107** (0.014)	-0.097** (0.015)
Service: Wandsworth		0.021 (0.014)	0.054** (0.016)
Age: 50 plus			0.081** (0.011)
Age: Up to 30			-0.032** (0.008)
Gender: Male			-0.006 (0.008)
Gender: not known			-0.570 (0.350)
Gender: not specified			0.035 (0.202)
Ethnicity: non-white			-0.016 (0.012)
Referral source: Other			-0.027+ (0.015)
Referral source: Self			0.020+ (0.011)
Constant	0.491** (0.005)	0.501** (0.010)	0.482** (0.015)
Observations	17,354	17,354	17,065
R <sup>2</sup>	0.0003	0.016	0.023

Adjusted R <sup>2</sup>	0.0002	0.015	0.023
Residual Std. Error	0.500 (df = 17352)	0.496 (df = 17347)	0.494 (df = 17050)

Note: + p<0.1; \* p<0.05; \*\* p<0.01

Fig 3. Number of treatment appointments attended by patients



N = 17,065  
 \*\* p<0.01, \* p<0.05, + p<0.1  
 Comparison of 2 or more appointments is primary analysis others comparisons are exploratory

### Patients having unscheduled dropout from treatment

Unscheduled dropout from treatment was a secondary outcome measure. We found no difference in the number of patients dropping out where the reason for a referral ending is recorded as “unscheduled discontinuation” (p = 0.63). In the control group 22.6% of patients were classified as having “unscheduled discontinuation” compared to 23.0% in the treatment group (0.5ppts, 95% CI; -0.7ppts, 1.7ppts , p = 0.39)

Table 3: OLS regression table for secondary outcome of unscheduled dropout from treatment

	Outcome: Patient has unscheduled dropout from treatment		
	1. OLS with no covariates	2. OLS controlling for services	3. OLS controlling for services and available patient characteristics
Treatment	0.003 (0.006)	0.003 (0.006)	0.005 (0.006)
Service: Durham		0.024* (0.010)	0.021* (0.010)
Service: Liverpool		0.249** (0.010)	0.247** (0.010)
Service: Sutton and Merton		0.033** (0.013)	0.038** (0.013)
Service: Somerset		0.068** (0.012)	0.071** (0.012)
Service: Wandsworth		0.127** (0.012)	0.118** (0.013)
Age: 50 plus			-0.062** (0.009)
Age: Up to 30			0.035** (0.007)
Gender: Male			-0.0004 (0.006)
Gender: not known			-0.157 (0.287)
Gender: not specified			0.118 (0.166)
Ethnicity: non-white			-0.006 (0.010)
Referral source: Other			-0.025* (0.013)
Referral source: Self			0.004 (0.009)
Constant	0.226** (0.005)	0.133** (0.008)	0.131** (0.013)
Observations	17,354	17,354	17,065
R <sup>2</sup>	0.00002	0.051	0.060
Adjusted R <sup>2</sup>	-0.00004	0.051	0.059



Residual Std. Error            0.419 (df = 17352)   0.408 (df = 17347)   0.406 (df = 17050)

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*Note:*

+ p<0.1; \* p <0.05; \*\* p<0.01

## Mental health outcomes

We did not see detectable improvements in mental health outcomes, as measured by GAD-7 and PHQ-9, in patients who received the text messages. To assess reliable recovery, we take patients who have at least two PHQ9 or GAD7 scores and look at how many are at caseness for either PHQ9 or GAD7 at their first appointment. Of these we then see how many are below clinical thresholds on both their GAD7 and PHQ9 at their last available data observation. Of these, those that have seen improvements greater than 5.20 and 3.53 in their PHQ9 and GAD7 are deemed to have had a reliable recovery.

In the control group 24.02% of patients were classified as having made a reliable recovery at the last available observation compared to 24.01% in the treatment group (0.01ppts, 95% CI; -1.75ppts, 1.77ppts, p = 0.99) However, the intervention did increase exposure to therapy, which should in turn improve patient outcomes.

Table 4. Reliable recovery

	Outcome: patient shows reliable recovery	
	1. OLS with no covariates	2. OLS controlling for services and available patient characteristics
Treatment	0.0004 (0.009)	-0.001 (0.009)
Service: Durham		0.084** (0.014)
Service: Liverpool		-0.014 (0.014)
Service: Sutton and Merton		-0.001 (0.020)
Service: Somerset		-0.022 (0.018)
Service: Wandsworth		0.017 (0.018)
Age: 50 plus		0.028* (0.013)
Age: Up to 30		-0.034** (0.010)
Gender: Male		0.003 (0.010)
Gender: not known		0.297 (0.301)
Gender: not specified		0.012 (0.015)
Ethnicity: non-white		-0.032 (0.020)
Referral source: Other		0.030* (0.014)
Constant	0.240** (0.007)	0.209** (0.018)
Observations	8,551	8,459
R <sup>2</sup>	0.00000	0.014
Adjusted R <sup>2</sup>	-0.0001	0.012

Residual Std. Error                      0.427 (df = 8549)    0.425 (df = 8445)

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*Note:*

+ p<0.1; \* p <0.05; \*\* p<0.01

## **Ancillary analyses**

In addition, exploratory analysis shows that patients who received supportive text messages attend more appointments on average. The control group attended 2.88 treatment appointments on average, compared to 2.77 appointments in the treatment group ( $p = 0.017$ , 95% CI: 2.79 to 2.97). This is a relative improvement of 3.9% (result of OLS regression  $p = 0.017$ , 95% CI: 0.01% to 7.2%).

Table 5. Number of treatment appointments attended

	Outcome: Number of treatment appointments attended	
	1. OLS with no covariates	2. OLS controlling for services and available patient characteristics
Treatment	0.111* (0.045)	0.107* (0.045)
Service: Durham		0.390** (0.072)
Service: Liverpool		0.344** (0.073)
Service: Sutton and Merton		0.981** (0.094)
Service: Somerset		-0.327** (0.088)
Service: Wandsworth		1.080** (0.092)
Age: 50 plus		0.500** (0.063)
Age: Up to 30		-0.200** (0.050)
Gender: Male		-0.071 (0.047)
Gender: not known		-2.545 (2.076)
Gender: not specified		-0.028 (1.199)
Ethnicity: non-white		-0.205** (0.069)
Referral source: Other		-0.113 (0.092)
Treatment		0.107 (0.067)
Constant	2.770** (0.032)	2.394** (0.091)
Observations	17,354	17,065
R <sup>2</sup>	0.0004	0.025
Adjusted R <sup>2</sup>	0.0003	0.024

Residual Std. Error                    2.964 (df = 17352)    2.935 (df = 17050)

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*Note:*

+  $p < 0.1$ ; \*  $p < 0.05$ ; \*\*  $p < 0.01$

## Harms

None of our analysis, nor any feedback from services or patients indicate that any harm was caused as a result of our study.

## Discussion

These results show that sending a series of supportive text messages improves the likelihood of a patient completing treatment in IAPT, compared to the usual communications sent as part of standard care. Moreover, results from exploratory analysis show that patients who receive the text messages attend more treatment appointments on average. This improvement is despite the series of text messages only being scheduled up to the date of the second treatment appointment being set. These supportive text messages constituted the sole element of this intervention, and were sent in addition to standard communication; no other aspects of patient care were altered.

This paper has also demonstrated the effectiveness of a theoretically driven approach to reducing drop out. The theory of operational transparency posits that emphasising that people in services are working for patients will increase engagement in a process. However, this has not been tested in clinical settings before. Therefore, this paper adds to the literature on the theory of operational transparency.

This paper also builds on the literature on treatment dropout. Previous studies have found that motivational interviewing and role induction can be effective in reducing dropout (Ogrodniczuk, Joyce, & Piper, 2005; Oldham et al., 2012). However, these interventions are expensive and require face-to-face or telephone contact with patients prior to treatment. This contact is expensive compared to a text message. Healthcare providers which are looking to reduce dropout should consider incorporating operational transparency messaging into their current communications to patients.

Our findings have clear policy implications. The direct implications are that the use of this type of messages should be scaled up across IAPT services. We calculate that if this intervention were scaled up to cover all IAPT referrals in England, it could lead to an additional 28,000 patients a year completing two or more treatment appointments. This figure was obtained by applying the relative improvement of 3.5% seen in our primary analysis to

the total number of referrals in 2019/20 (NHS Digital, 2020). Since these figures are extrapolations they should be treated with caution.

Whilst these results are promising and have important implications for policy, this trial has limitations. While we compared the supportive text messages against business-as-usual messages, we did not hold the number of messages that the groups received constant. As the control group received fewer messages than the treatment group, it is possible that the effect of the messages was driven by the increased number of messages.

The theoretical underpinning of our intervention was the text messages would generate a feeling of greater engagement with treatment because of a sense of reciprocity. Ideally, we would have measured whether our text messages did increase this intermediate outcome. We did not do this, because it would have been too logistically difficult to survey all patients in seven clinics. However, we would recommend that future work surveys a subset of patients to identify the mechanism of action for this intervention.

There were implementation issues in this trial, as can be expected given the manual scheduling of the text messages in services and reliance on busy administrative staff. As noted in the results section above, one of the seven services was removed altogether from the analysis as the patients in the control group were inadvertently also sent the intervention text messages. Across all services, while services reported incorporating the scheduling of text messages into their day, and reported that it became a very quick process to carry out, many patients did not receive all of the text messages they should have. On average, those in the treatment group received 1.8 messages when they should have received 3.5 messages. Patients therefore received roughly half the 'treatment' they should have received. However, this issue should have caused a bias against our treatment (i.e. the effect of the treatment would have been weakened).

A further limitation is the generalisability of the results to different health systems. The trial took place in seven IAPT services spread geographically across England, and therefore we can be relatively confident that our effect would be seen in other IAPT services across England. It is possible that the intervention would be effective in other services with similar patient groups, such as secondary mental health services, which also see very long waiting times (much longer than those in IAPT in many cases). More broadly, it is unclear whether such messages would have a positive impact in other health systems with different patient groups. The generalisability of using such theoretically driven messages is an area for future research.

## Conclusion

In this project we designed a novel, low-cost intervention consisting of a series of supportive text messages using meta-data already held by services. This intervention has not previously been tested in this setting. The intervention increased engagement with IAPT services,

despite sub-optimal implementation in many services. We saw a statistically significant improvement in our primary outcome of completing a course of treatment (attending two or more treatment appointments), which has high potential for greater clinical value if scaled.

Further work should be carried out to maximise impact and develop more sophisticated behavioural interventions. The application of an approach such as this could be tested in other settings where dropout from waiting lists poses a problem, such as other mental health treatment services and drug and alcohol treatment services.

## Conflicts of interest

All authors are employees of The Behavioural Insights Team and declare that they have no conflict of interest.

## Authors' contributions

**Victoria Flahavan:** Conceptualisation, Investigation, Project Administration, Writing - Original Draft; **Edward Flahavan:** Methodology, Formal analysis, Data Curation, Writing - Original Draft; **Alex Gyani:** Writing - Review & Editing; **Michael Hallsworth:** Conceptualisation, Writing - Original Draft, Supervision.

## Trial registration

The trial was pre-registered on ISRCTN (trial number 73424656).

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## Appendices

### Appendix A: Standard care in participating services

Provider	Standard care communications (business as usual)
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Talking Matters Northumberland (Northumberland)	<ul style="list-style-type: none"> <li>• Telephone call to book appt 1</li> <li>• Letter with each appt date</li> <li>• SMS 2 days before appt</li> <li>• Email 2 days before appt</li> </ul>
Sutton Uplift (Sutton)	<ul style="list-style-type: none"> <li>• Telephone call to book appt 1</li> <li>• SMS and letter if no response</li> <li>• SMS 24 hours before each appts</li> <li>• Letter whilst on waiting list suggesting online CBT or group</li> </ul>
Talk Wandsworth (Wandsworth)	<ul style="list-style-type: none"> <li>• Telephone call to book appt 1</li> <li>• SMS and letter if no response</li> <li>• SMS 24 hours before each appts</li> <li>• Letter whilst on waiting list suggesting online CBT or group</li> </ul>
Outlook Southwest (Cornwall and the Scilly Isles)	<ul style="list-style-type: none"> <li>• Telephone call or letter to book appt 1</li> <li>• Letter with each appt date</li> <li>• SMS 2 days before appt 1 (if consent)</li> <li>• Email letter optional</li> </ul>
Talking Therapies (Somerset)	<ul style="list-style-type: none"> <li>• Telephone call to book appt 1 and appt 2</li> <li>• Letter with each appt</li> <li>• SMS 24 hours before appt</li> <li>• Email with MDS forms 48hrs before appt</li> </ul>
Talking Changes (Durham)	<ul style="list-style-type: none"> <li>• Telephone or letter to book appt 1</li> <li>• Letter with each appt date</li> <li>• Low risk: telephone guided self-help</li> <li>• Med-high risk: weekly telephone call whilst on waiting list</li> <li>• Telephone call from therapist for appt 2</li> <li>• SMS reminder sent for appt optional</li> </ul>
Talk Liverpool (Mersey)	<ul style="list-style-type: none"> <li>• Telephone call to book appt 1</li> <li>• Letter with each appt date</li> <li>• SMS reminder 2 days before each appt</li> </ul>

**Appendix B:** Table showing the timing of text messages and the rules associated with them, along the patient pathway.

**Series 1 – Referral to service – waiting for first appointment**



#	Timing	SMS Message
1.1	Day 1 after referral	<p>Welcome to [IAPT service]. We received your referral on XX/XX/XX. We'll be in touch to book your first appointment shortly.</p> <p><u>Rules</u>  <i>Send if: new referral.</i>  <i>Do not send if: 1.1 sent or in series 2.</i></p>
1.2	7 days after 1.1	<p>Hi, we're working to find your appt as soon as we can. Please call XXX XXXX XXXX if your situation changes or you no longer want an appt. [IAPT service].</p> <p><u>Rules</u>  <i>Send if: 1.1 sent and 7 days since referral and not in series 2.</i>  <i>Do not send if: 1.2 sent or date 1<sup>st</sup> appt set or in series 2.</i></p>
<b>Series 2 – Confirmation message after first appointment set</b>		
#	Timing	SMS Message
2.1	0 days after first appt set (as soon as 1st appt date set)	<p>Hi, your appt is on XX/XX/XX at XX:XX. Please make plans to be available. Looking forward to speaking. To rearrange call XXX XXXX XXXX. [IAPT service].</p> <p><u>Rules</u>  <i>Send if: date for 1<sup>st</sup> appt set and not in series 2.</i>  <i>Do not send if: 2.1 sent or in series 3.</i></p>
<b>Series 3 – First appointment attended – waiting for second appointment</b>		
#	Timing	SMS Message
3.1	7 days after first appt	<p>Hi, thanks for talking to us last week. We'll be in touch with next steps soon. Thanks, [IAPT service].</p> <p><u>Rules</u>  <i>Send if: first appt attended and 7 days since first appt and not in series 4.</i>  <i>Do not send if: 3.1 sent or date 2<sup>nd</sup> appt set or in series 4.</i></p>
3.2	14 days after text 3.1	<p>Hi, we're working to keep everyone moving along the waiting list. We'll send you an update in 3 weeks if your appt hasn't been set by then. [IAPT service].</p> <p><u>Rules</u>  <i>Send if: 3.1 sent and 14 days since 3.1 and not in series 4.</i>  <i>Do not send if: 3.2 sent or date 2<sup>nd</sup> appt set or in series 4.</i></p>

3.3	21 days after text 3.2	<p>Hi, we haven't forgotten about you. We're doing our best to keep you moving forward on the waiting list. Thanks for your patience. [IAPT service].</p> <p><u>Rules</u></p> <p><i>Send if: 3.2 sent and 21 days since 3.2 and not in series 4.</i>  <i>Do not send if: 3.3 sent or date 2<sup>nd</sup> appt set or in series 4.</i></p>
3.4	21 days after text 3.3	<p>We're sorry that you're still waiting. We wanted to reassure you that we're working to book you an appt soon. Thanks for bearing with us. [IAPT service].</p> <p><u>Rules</u></p> <p><i>Send if: 3.3 sent and 21 days since 3.3 and not in series 4.</i>  <i>Do not send if: 3.4 sent or date 2<sup>nd</sup> appt set or in series 4.</i></p>
3.5	21 days after text 3.4	<p>Hi there, sorry for the continued wait. We don't expect you'll have to wait much longer. Thanks for your patience while we do all we can. [IAPT service].</p> <p><u>Rules</u></p> <p><i>Send if: 3.4 sent and 21 days since 3.4 and not in series 4.</i>  <i>Do not send if: 3.5 sent or date 2<sup>nd</sup> appt set or in series 4.</i></p>
<b>Series 4 – Confirmation message after second appointment set</b>		
#	Timing	SMS Message
4.1	0 days after second appt set (as soon as 2nd appt date set)	<p>Hi, we're pleased to say that your next appt is on XX/XX/XX at XX:XX. Please make plans to be available. To rearrange call XXX XXXX XXXX. [IAPT service].</p> <p><u>Rules</u></p> <p><i>Send if: date for 2nd appt set.</i>  <i>Do not send if: 4.1 sent or if already attended second appt.</i></p>

## References

Brorson, H. H., Arnevik, E. A., Rand-Hendriksen, K., & Duckert, F. (2013). Drop-out from addiction treatment: a systematic review of risk factors. *Clinical psychology review, 33*(8), 1010-1024.

Buell, R. W., Kim, T., & Tsay, C. J. (2017). Creating reciprocal value through operational transparency. *Management Science, 63*(6), 1673-1695.

Buell, R. W., Porter, E., & Norton, M. I. (2020). Surfacing the submerged state: Operational transparency increases trust in and engagement with government. *Manufacturing & Service Operations Management.*

Clark, D. M. (2011). Implementing NICE guidelines for the psychological treatment of depression and anxiety disorders: the IAPT experience. *International review of psychiatry, 23*(4), 318-327.

Clark, D. M., Canvin, L., Green, J., Layard, R., Pilling, S., & Janecka, M. (2018). Transparency about the outcomes of mental health services (IAPT approach): an analysis of public data. *The Lancet*, *391*(10121), 679-686.

Davis, A., Smith, T., Talbot, J., Eldridge, C., & Betts, D. (2020). Predicting patient engagement in IAPT services: a statistical analysis of electronic health records. *Evidence-based mental health*, *23*(1), 8-14.

Design Council. Improving Patient Experience in A&E. (2014)

[https://www.designcouncil.org.uk/sites/default/files/asset/document/a%26e\\_8steps.pdf](https://www.designcouncil.org.uk/sites/default/files/asset/document/a%26e_8steps.pdf). Accessed 8 May 2021.

Gaglia, A., Essletzbichler, J., Barnicot, K., Bhatti, N., & Priebe, S. (2013). Dropping out of dialectical behaviour therapy in the NHS: the role of care coordination. *The Psychiatrist*, *37*(8), 267-271.

Hallsworth, M., Berry, D., Sanders, M., Sallis, A., King, D., Vlaev, I., & Darzi, A. (2015). Stating appointment costs in SMS reminders reduces missed hospital appointments: findings from two randomised controlled trials. *PloS one*, *10*(9), e0137306.

Head, K. J., Noar, S. M., Iannarino, N. T., & Harrington, N. G. (2013). Efficacy of text messaging-based interventions for health promotion: a meta-analysis. *Social science & medicine*, *97*, 41-48.

Henzen, A., Moeglin, C., Giannakopoulos, P., & Sentissi, O. (2016). Determinants of dropout in a community-based mental health crisis centre. *BMC psychiatry*, *16*(1), 1-7.

Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: validity of a brief depression severity measure. *Journal of general internal medicine*, *16*(9), 606-613.

Marshall, D., Quinn, C., Child, S., Shenton, D., Pooler, J., Forber, S., & Byng, R. (2016). What IAPT services can learn from those who do not attend. *Journal of Mental Health*, *25*(5), 410-415.

NHS Digital. Psychological Therapies, Annual report on the use of IAPT services - England, 2017-18. (2018).

<https://digital.nhs.uk/data-and-information/publications/statistical/psychological-therapies-annual-report-s-on-the-use-of-iapt-services/annual-report-2017---18>. Accessed 8 May 2021.

NHS Digital. Psychological Therapies, Annual report on the use of IAPT services 2019-20. (2020)

<https://digital.nhs.uk/data-and-information/publications/statistical/psychological-therapies-annual-report-s-on-the-use-of-iapt-services/annual-report-2019-20>. Accessed 8 May 2021.

Ogrodniczuk, J. S., Joyce, A. S., & Piper, W. E. (2005). Strategies for reducing patient-initiated premature termination of psychotherapy. *Harvard review of psychiatry*, *13*(2), 57-70.

Oldham, M., Kellett, S., Miles, E., & Sheeran, P. (2012). Interventions to increase attendance at psychotherapy: A meta-analysis of randomized controlled trials. *Journal of consulting and clinical psychology*, *80*(5), 928.

Orr, J. A., & King, R. J. (2015). Mobile phone SMS messages can enhance healthy behaviour: a meta-analysis of randomised controlled trials. *Health psychology review*, *9*(4), 397-416.

Robotham, D., Satkunanathan, S., Reynolds, J., Stahl, D., & Wykes, T. (2016). Using digital notifications to improve attendance in clinic: systematic review and meta-analysis. *BMJ open*, *6*(10).

Schwebel, F. J., & Larimer, M. E. (2018). Using text message reminders in health care services: A narrative literature review. *Internet interventions*, *13*, 82-104.

Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder: the GAD-7. *Archives of internal medicine*, *166*(10), 1092-1097.