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The role of psychological factors in patients' choices to see their general practitioner or pharmacist for minor conditions

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ABSTRACT

Objective: UK-based patients can consult with, and be treated by, pharmacists for various minor medical conditions. However, research needs to identify the psychological factors that influence patients' decisions to consult with a pharmacist over alternative treatment responses. The current study addressed this gap.

Methods and measures: UK residents (N=329) completed measures of respect and trust for general practitioners (GPs) and pharmacists, alongside other measures that could influence treatment choices. Participants then read vignettes describing symptoms of conjunctivitis, influenza, and contact dermatitis and were asked to choose how they would respond if they experienced those symptoms.

Results: Participants were nearly twice as likely to choose to see their pharmacist than GP. Respect and trust of pharmacists were higher for those choosing to see their pharmacist over those selecting treatment alternatives. GPs were respected more than pharmacists, an effect mediated by greater perceived assertiveness and morality of GPs. However, seeing pharmacists was rated less hassle and participants reported greater self-efficacy for seeing them compared to GPs. **Conclusion:** Strategies that increase pharmacists' perceived assertiveness and morality could enhance respect and trust of pharmacists. Such changes could facilitate the current drive in the UK to utilize pharmacies more to minimise GP service demand.

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KEYWORDS

Respect; liking; trust; pharmacists; general practitioners; treatment decisions

Introduction

An annual survey across 23 countries in Europe and Asia, based on over 46000 respondents, has recently reported a fourth consecutive decline in satisfaction with national healthcare systems (STADA, 2024). The report highlighted the most common reason for dissatisfaction was difficulty in getting appointments. Satisfaction with healthcare in the United States has also markedly declined, although not only access but also cost tend to be identified as key issues (Gallup, 2024). Across all the countries included in the STADA report, satisfaction with health care systems had dropped the most in the United Kingdom (UK) compared to the year previously (by 11%). The concerning trend in the UK is further supported by recent research indicating that

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overall satisfaction with the National Health Service (NHS) in the UK is currently at its lowest (24%) since records began in 1983, with the main reason for dissatisfaction being general practitioner (GP) and hospital waiting times (Jefferies et al., 2024).

Declining satisfaction with national healthcare systems and issues around access are clearly important matters to be addressed across many countries. To deal with long wait times and manage demand on UK GP services, there have been attempts to direct patients to pharmacists instead for a range of minor conditions. For example, a UK national health website designed to help patients make treatment choices based on their condition, encourages patients to speak to their pharmacists for various conditions including contact dermatitis (a type of eczema triggered when coming into contact with irritants such as soap, detergents and disinfectants; https://www. nhs.uk/conditions/contact-dermatitis/), conjunctivitis (a condition which makes eyes appear red and become uncomfortable, watery, sticky and itchy; https://www.nhs.uk/ conditions/conjunctivitis/) and influenza (which can include a range of symptoms such as a high temperature, body aches, a sore throat and nausea; https://www.nhs. uk/conditions/flu/#:~:text=A%20pharmacist%20can%20help%20with,more%20than%20 the%20recommended%20dose.). In January 2024, the Pharmacy First service was launched in the UK, enabling patients to see pharmacists, without referral, for seven common conditions and for pharmacists to provide a restricted set of prescription only medicines (NHS England, 2024). Given these current drives to shift patients' demands from GPs to pharmacists, understanding perceptions of GPs and pharmacists and the factors that might influence patients' decisions to see their GP, pharmacist or make alternative decisions (such as to do nothing) is urgently needed.

Respect, liking and trust

Establishing respect (an evaluative position where certain individuals are deeply admired or held in high regard based on their traits or actions, as well as their achievements, status or being human; see, Lalljee et al., 2009), trust (a belief that the individual has their best interests at heart, is capable and truthful, Fugelli, 2001) and liking (an evaluative position where individuals' have a preference or fondness for certain individuals due, in particular, to their traits or actions) for healthcare professionals are likely important. Respect and trust have been argued to be central to the effectiveness of any system, including those related to health (Wiig et al., 2024). Trust in healthcare professionals has been shown to be related to treatment adherence and health outcomes (see Birkhäuer et al., 2017 and Chandra et al., 2018, for reviews) which, in turn, would likely impact future treatment decisions. Patients who like their doctors report greater treatment satisfaction (e.g. Hall et al., 2002) while disliking or distrusting doctors has been linked with avoidance (Kannan & Veazie, 2014).

Factors affecting respect, liking and trust

People form impressions of others based on information that indicates their underlying traits. Such traits have been divided into agentic (that help individuals to get ahead and achieve their own goals) and communal (that help individuals to get along with others) (e.g. Abele & Wojciszke, 2007; Bakan, 1966) and subdivided further into

competence and assertiveness (agentic) and morality and warmth (communal) (e.g. Abele et al., 2016). In the context of healthcare, competence (as displayed through clinical and communicational knowledge and skills, Black & Craft, 2004), morality (given the aim of healthcare is to support the fundamental need of health, Pellegrino, 2001), assertiveness (the ability to effectively communicate opinions or knowledge with patients, in a non-patronizing manner, while respecting their autonomy, Richard et al., 2023) and warmth (developing empathetic relationships and treating patients as individuals, Howe et al., 2019) are all essential for patient care. According to the Morality-Agency-Communion model of respect and liking (Prestwich et al., 2021; Prestwich, 2024), competence and assertiveness are more important for respect than liking, warmth more important for liking than respect, and morality is particularly important for both respect and liking.

As well as respect and liking, research has shown that trust for healthcare professionals is impacted by traits related to competence, morality and warmth. For example, Krot and Rudawska (2016) identified benevolence (comprising respect, empathy and communication skills), integrity (linked with morality) and competence as three critical factors for trust between patients and doctors. Gregory and Austin (2021) identify similar factors- respect and affability- influencing trust in pharmacists. Additional research has indicated the importance of competence and interpersonal skills related to morality and warmth, such as care and compassion, for trust (e.g. Chandra & Mohammadnezhad, 2020; Fugelli, 2001; Gopichandran & Chetlapalli, 2013; Isangula et al., 2020; see Pearson & Raeke, 2000, for a review).

In models covering respect, liking and trust, healthcare professionals who display competence and care are likely to be trusted, those who are competent but score low on caring are likely to be respected, those who are caring but score low on competence are likely to be seen with affection (liked) and those who score low on both competence and caring are likely to be distrusted (e.g. Paling, 2003). While trust research has focused on traits and actions relating to competence, morality and warmth, the role of assertiveness in trust cannot be dismissed given interactions that create anxiety or doubt (that can occur through a lack of assertiveness) can lead to distrust (see Gabay, 2015). In sum, the extent to which GPs and/or pharmacists are seen as competent, moral, assertive and warm should underpin the degree to which they are respected, liked and trusted (Prestwich et al., in press).

Doctors versus pharmacists

In their latest survey of patients, NHS England (2023) reported that only 7.0% of individuals did not have confidence and trust in the healthcare professional that the patient saw at their GP Practice (64.4% reported definite confidence and trust; 28.6% had confidence and trust to some extent). Although the survey is not specific to trust nor to GPs, these results are likely to reflect a high level of trust in GPs. Relatedly, only 17% of patients reported they would have a great deal of confidence in a pharmacist prescribing new medicines that the patient had not taken before (23% said they would have not very much or no confidence and 19% said it would depend on the condition, Duxbury & Fisher, 2022). In a direct test of trust of advice from pharmacists versus GPs, fewer reported they would have a great deal of trust in pharmacists (39%) than GPs (62%) (The General Pharmaceutical Council, 2015).

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GPs could be trusted more than pharmacists because GPs could be perceived as more competent, assertive and moral. Concerns about pharmacists' lack of training and knowledge around providing services beyond dispensing (see Hindi, Schafheutle & Jacobs, 2018, for a review) could undermine their perceived competence, as well as how assertive or confident they are in delivering healthcare advice and treatments. Moreover, pharmacists can sell a range of products including those that do not support health outcomes, such as confectionary, and this dual role as both a healthcare provider and retailer can negatively impact how moral they are perceived to be (Gellatly et al., 2023). Furthermore, the large amount of literature on the corruption of the pharmaceutical industry (e.g. Skandrani & Sghaier, 2016; Sismondo, 2021) may negatively impact public perceptions of pharmacists' morality. In summary, consistent with relevant models of respect (e.g. Prestwich et al., 2021; Prestwich, 2024) and trust (e.g. Paling, 2003), these concerns around the perceived level of their expertise or competence, assertiveness and morality of pharmacists could negatively influence respect and trust for pharmacists compared to GPs.

Other factors influencing treatment choices

While perceptions of GPs and pharmacists likely play a role in treatment decisions, other more practical factors, such as those related to accessibility, cannot be ignored. Challenges around booking appointments to see GPs represent a key underlying factor for dissatisfaction with UK health services (Jefferies et al., 2024) and the majority of people agree that making an appointment is a hassle (e.g. Virji, 1990). Relatedly, these difficulties and challenges would likely undermine self-efficacy (beliefs in one's abilities to perform specific behaviours or actions, e.g. Bandura, 1997) related to seeing their GP in a way that is less likely to apply to seeing their pharmacist given the ease of walk-in systems that do not require pre-booking.

Aims

The current study had several aims. First, for a range of minor conditions, we wanted to explore whether individuals are more likely to choose to see their GP or pharmacist or alternative options (use a helpline for health advice or do nothing). Second, the study aimed to compare and contrast respect, liking and trust for GPs and pharmacists, as well as other potential differences across other psychological factors such as self-efficacy. Third, in this study, we tested whether differences in recommending GPs or pharmacists were mediated by differences in respect and trust. Finally, we tested whether the individuals who made different treatment choices differed across the measured variables.

Hypotheses

Hypothesis 1a

Despite a recent UK-based survey indicating that 58% of respondents reported that they would go to their pharmacy versus 30% who would go to their GP practice to 'get information and advice about a minor condition such as a sore throat or earache' (Duxbury et al., 2023), it was anticipated that for a set of scenarios describing less

common conditions (conjunctivitis, influenza, and contact dermatitis), where perceptions of their GP vs. pharmacist (e.g. competence) and attitudes towards them (e.g. respect and trust) may matter more, participants would more likely choose to see their GP than pharmacist.

Hypotheses 1b-1f

Based on the evidence presented, it was predicted that participants would b) rate GPs as more i) competent; ii) assertive; and iii) moral than pharmacists; c) respect and d) trust GPs more than pharmacists; e) be more likely to recommend their GP than pharmacist for advice and support; but f) rate pharmacists as less hassle to see. Relatedly, we also tested whether self-efficacy to see pharmacists was greater than to see GPs.

Hypotheses 2a and 2b

Higher ratings of a) respect and b) trust for GPs over pharmacists would be mediated by ratings of higher i) competence ii) assertiveness and iii) morality in GPs than pharmacists. While warmth is likely to be an important factor underlying trust (e.g. Paling, 2003), it was not anticipated that GPs would be rated as warmer (or liked more) than pharmacists.

Hypotheses 3a and 3b

Higher recommendations for advice and support for GPs than pharmacists would be mediated by higher ratings of a) respect and b) trust.

Method

Design

A pre-registered (AsPredicted 165919 https://aspredicted.org/D2Z_6N2), online, correlational study was conducted using vignettes to assess how participants would most likely respond should they experience different sets of symptoms. Prior to these scenarios, participants completed a set of measures which were used to identify whether these predicted treatment choices. Ethical approval was provided by the School of Psychology Research Ethics Committee at the University of Leeds (PSCETHS-986). The study materials and data that support the findings of this study are available in the OSF at https://osf.io/4gp8f/?view_only=c73320fe25ff4f169fbd2b 25731d8088

Participants

The target sample size was 329 participants to detect small effects (d = .20) with 90% power at p < .01 (one-tailed) using repeated measures t-tests. To be eligible, participants needed to be living in the UK and be a UK national (to maximise the likelihood of being familiar with the UK health system), be fluent in English, have a Prolific approval rating of at least 95 and have not taken part in any previous related studies conducted by the lead author. Participants were paid £0.50 for taking part.

In March 2024, three hundred and fifty participants accessed and started the study following advertisement on Prolific (https://www.prolific.com/). A further 9 either returned their survey without the completion code or were timed out. Consistent with the pre-registration, to be included in the analyses, participants needed to pass the attention check (that required participants to select the correct number on a rating scale item, embedded within the measures, that stated 'Please select 5 on the scale for this item'), complete the study and not do so too quickly (defined, a-priori, as less than 2 min). Twenty-one participants were excluded (1 participant was too quick, did not complete the study and failed the attention check; 5 participants did not complete the study and failed the attention check; 1 participant did not complete the study but passed the attention check and spent more than 2 min taking part; 8 participants only failed the attention check; 6 participants completed the study and passed the attention check but spent less than 2 min taking part). In the final sample, there were no pharmacists and 1 GP. Most had reported they had contacted, visited or had an appointment with their GP for health advice or treatment at least once within the last 2 years (n = 284 vs. n=45 who had not). About half had done the same in relation to a pharmacist (excluding picking up prescriptions) (n = 166 vs. n = 163 who had not). The other measured characteristics of the final sample (N=329) are summarized in Table 1.

Measures

Participants were asked to complete the measures specific to a GP/pharmacist if they see the same one all or most of the time; if not, and they consult more than one, then they were asked to complete the measures in relation to seeing these GPs/pharmacists in general. Single item measures on 7-point scales (1 = 'Strongly Disagree'; 7 = 'Strongly Agree') were used to assess *respect* (I respect my GP/pharmacist), *trust* (I trust my GP/pharmacist), *liking* (I like my GP/pharmacist), *warmth* (My GP/pharmacist is warm (e.g. friendly, talkative)), *competence* (My GP/pharmacist is competent (e.g. capable, knowledgeable)), *assertiveness* (My GP/pharmacist is moral (e.g. fair, honest), the extent to which they would *recommend* their GP and pharmacist (I would recommend my GP/pharmacist to others for advice and support) and *hassle* (Seeing a GP/pharmacist for health advice and treatment is too much hassle). Two items assessed *self-efficacy* (If I wanted to, I could see a GP/pharmacist for health advice and treatment; both $\alpha > .83$) and *rudeness/politeness* (My GP/pharmacist can be rude/impolite; both $\alpha > .96$).

Scenarios

Scenarios were presented for three conditions that NHS webpages identify as being treatable by pharmacists directly: conjunctivitis, influenza, and contact dermatitis. The scenarios were written as clearly and concisely as possible based on the symptoms described on NHS webpages. Some contextual information was provided for each scenario: for instance, for conjunctivitis and influenza, it was noted that the symptoms had lasted 3 days- this was deliberate as UK advice is to consult a GP if the symptoms have not cleared within 7 days (https://www.nhs.uk/conditions/

Baseline characteristic	n	%	Mean	SD
Age (in years)			41.10	12.62
Gender				
Female/Woman	199	60.5		
Male/Man	124	37.7		
Agender/no gender	2	0.6		
Nonbinary	2	0.6		
Genderfluid	1	0.3		
Trans	1	0.3		
Student				
Yes	24	7.3		
No	302	91.8		
Prefer not to say	3	0.9		
Ethnicity				
White/Caucasian	250	76.0		
Asian (inc. Chinese, Indian, Pakistani, Bangladeshi)	17	5.2		
Mixed	9	2.7		
Black (inc. Black Caribbean, Black African)	7	2.1		
Other (e.g. Latino)	2	0.6		
Unclear (e.g. British)	43	13.1		
Prefer not to say	1	0.3		
Highest educational gualification				
Postgraduate degree	55	16.7		
Undergraduate + professional gualification	3	0.9		
Undergraduate degree	150	45.6		
Vocational (e.g. NVQ, HNC, HND, CertHE)	20	6.1		
A Levels/AS Level/Highers/Equivalent	52	15.8		
GCSE/O/Standard Grades/CSE	39	11.9		
Other (e.g. Access course, technical gualification)	5	1.5		
Unclear (e.g. graduate, high-school graduate)	3	0.9		
None	2	0.6		
Registered with a GP				
Yes	311	94.5		
No	18	5.5		
Has a regular GP who they see most/all the time				
Yes	116	35.3		
No	213	64.7		
Has a regular pharmacist who they see most/all the				
time				
Yes	96	29.2		
No	233	70.8		

Table 1. Sample characteristics.

conjunctivitis/ and https://www.nhs.uk/conditions/flu/) and it was considered that these symptoms lasting a couple of days or less would more likely prompt no action at that time; for contact dermatitis, the symptoms were presented so that some individuals could be troubled by the symptoms (inflamed after contact with disinfectant. Your skin is extremely itchy....Your concern grows when you wake up the following morning and it hasn't improved) and increasing the likelihood that an individual would want to consult a GP, pharmacist or dial 111. Ultimately, the three scenarios were chosen as they are conditions that could be treated by a pharmacist. The scenarios were presented so they were clear and concise, consistent with symptoms of the condition and thus realistic and may lead to individuals considering seeking treatment rather than doing nothing. After each scenario, participants were asked which of the following responses they were most likely to choose: make an appointment with their GP, visit their local pharmacist, hope it goes away by itself, call 111. 111 is a telephone service available at anytime of day and can be used for urgent medical advice that is not life-threatening; users speak with a

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trained advisor who will direct them to the most appropriate healthcare service based on their symptoms.

Conjunctivitis

You wake up for a third consecutive day with a sore eye. It looks pink/red in colour and there is some discharge that is crusted in your eyelashes. It is very uncomfortable.

Influenza

You have had a cough, sore throat, and runny nose for 3 days. You woke up this morning with a high temperature, body aches and severe headache.

Contact dermatitis

Over the course of a few hours, your skin has become inflamed after contact with disinfectant. Your skin is extremely itchy, discoloured and has dried and cracked. Your concern grows when you wake up the following morning and it hasn't improved.

Procedure

After providing informed consent and responding to demographic measures, participants rated their perceptions of their pharmacist and GP in a randomized order. They were then presented with three scenarios describing various medical symptoms and were asked to choose one of four treatment responses (see their GP, see their pharmacist, call 111 or hope it goes away by itself). All participants were subsequently debriefed.

Method of analysis

Repeated measures *t*-tests were conducted to compare the ratings of GPs vs. pharmacists (Hypotheses 1a-1f). Within-subjects mediation was used to test Hypotheses 2 and 3.

Across descriptions of three medical conditions, we measured patients' treatment preferences (see GP, see pharmacist, dial 111, do nothing) and explored using ANOVA, for each condition, whether participants who made different choices differed in their ratings of respect, liking, trust, competence, assertiveness, morality, warmth, self-efficacy, likelihood of recommending, past behaviour, rudeness/impoliteness and hassle for seeing GPs and pharmacists. Bonferroni post-hoc tests were conducted separately for each outcome and for each medical condition to control for multiple comparisons across the different treatment response options (see GP, see pharmacist, call 1111, do nothing) but no further adjustments were made (i.e. no corrections were made to account for multiple measures and multiple medical conditions because these were viewed as distinct rather than related outcomes).

In sensitivity analyses, participants who reported being either a GP (n=1) or a pharmacist (n=1), completed the study using the same Prolific ID (n=0) or IP address (n=0) as somebody else who had completed the study were to be excluded from the analyses testing the hypotheses. As the pharmacist failed the attention check and was excluded on that basis, the single GP was the only person excluded in the sensitivity analyses. The results were not unduly affected- all significant effects remained significant and vice-versa.

Results

Hypotheses 1a-f

Inconsistent with Hypothesis 1a, participants, on average, actually chose to see their pharmacist more than GPs across the three conditions. However, supporting Hypotheses 1bii, 1biii and 1c, GPs were rated as more assertive, more moral and were respected more than pharmacists. Supporting Hypothesis 1f, pharmacists were rated as less hassle to see than GPs. In addition, patients' self-efficacy to see pharmacists was higher than their self-efficacy to see GPs and GPs were rated as slightly ruder/more impolite than pharmacists, on average (see Table 2).

GPs and pharmacists were similarly trusted, recommended, and seen as competent (failing to support Hypotheses 1d, 1e and 1bi). In addition, GPs and pharmacists were equally liked and were rated similarly in terms of their warmth.

Hypotheses 2a and 2b

In single mediator models, greater respect for GPs over pharmacists was mediated by greater levels of assertiveness (supporting Hypothesis 2aii), Effect = 0.16, SE=0.04, p < .0001, and morality (supporting Hypothesis 2aiii), Effect = 0.12, SE=0.05, p = .006, in GPs than pharmacists. Both assertiveness, Effect = 0.05, SE=0.02, p = .01, and morality, Effect = 0.11, SE=0.04, p = .006, remained significant when entered together in a dual mediator model. Inconsistent with Hypothesis 2ai, competence, Effect = 0.03, SE=0.05, p = .54 (and warmth, Effect = 0.02, SE=0.04, p = .58) did not mediate this effect. When entered altogether in a multiple mediator model, only morality was significant, Effect = 0.07, SE=0.03, p = .009; assertiveness, competence and warmth were non-significant.

Although trust did not differ between GPs and pharmacists, mediation analyses were still conducted (see, for example, O'Rourke & MacKinnon, 2018). The patterns that emerged were similar to those detected for respect. Assertiveness, Effect = 0.19, SE=0.04, p < .0001, and morality, Effect = 0.12, SE=0.04, p = .006, were significant mediators in single mediator models (supporting Hypotheses 2bii and 2biii) while competence, Effect = 0.03, SE=0.05, p = .54 (inconsistent with Hypothesis 2bi), and warmth, Effect = 0.02, SE=0.04, p = .58, were non-significant. When testing the two significant mediators simultaneously, both assertiveness, Effect = 0.09, SE=0.02, p = .0003, and morality, Effect = 0.10, SE=0.04, p = .007, remained significant. When entered altogether in a multiple mediator model, only morality was significant, Effect = 0.05, SE=0.02, p = .01; assertiveness, competence and warmth were non-significant.

Hypotheses 3a and 3b

As with trust, the extent to which patients would recommend their GP and pharmacist did not differ but mediation analyses were conducted in any case. Based on the pattern of means (see Table 2), it is possible that the lack of difference in

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Measure	G	iP	Pharn	nacist	t(328)	d	95% CI
	М	SD	М	SD			
Times selected for treatment (0-3)	0.66	0.84	1.23	0.96	-6.72***	-0.37	-0.480.26
Respect	5.66	1.25	5.48	1.23	2.60**	0.14	0.04-0.25
Trust	5.47	1.29	5.47	1.21	-0.04	-0.002	-0.11-0.11
Liking	5.08	1.37	5.03	1.27	0.64	0.04	-0.07 - 0.14
Warm	4.95	1.43	4.90	1.44	0.55	0.03	-0.08 - 0.14
Competent	5.57	1.26	5.53	1.16	0.61	0.03	-0.07 - 0.14
Assertive	5.42	1.18	5.04	1.24	5.20***	0.29	0.18-0.40
Moral	5.53	1.16	5.35	1.17	2.81**	0.16	0.05-0.26
Recommend	4.98	1.58	5.08	1.44	-1.04	-0.06	-0.17-0.05
Hassle	4.39	1.86	2.92	1.57	12.45***	0.69	0.57 - 0.81
Self-efficacy	4.31	1.53	5.47	1.13	-11.97***	-0.66	-0.780.54
Rude/Impolite	2.62	1.55	2.40	1.50	2.54*	0.14	0.03-0.25
Past behaviour	3.70	3.75	1.19	1.94	12.58***	0.69	0.57-0.81

Table 2.	Means	and	standard	deviations	of	measures	(<i>N</i> = 329).
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p < .05.

^{••}p < .01. ••σ < .001.

recommending GPs or pharmacists could be attributable to indirect effects that have opposing signs. For instance, respect is greater for GPs than pharmacists but visiting GPs is also seen as more hassle and patients have lower self-efficacy in seeing them—such effects could cancel each other out.

In a single mediator model, respect was a significant mediator for GP versus pharmacist recommendations (supporting Hypothesis 3a), Effect = 0.16, SE=0.06, p = .01; trust was non-significant, Effect = -0.003, SE=0.06, p = .96 (not supporting Hypothesis 3b). In non-registered analyses, both hassles, Effect = -0.47, SE=0.07, p < .0001, and self-efficacy, Effect = -0.43, SE=0.07, p < .0001, also mediated the effect in single mediator models but liking did not, Effect = 0.05, SE=0.07, p = .52. When entered together simultaneously, respect, Effect = 0.13, SE=0.05, p = .01, hassles, Effect = -0.21, SE=0.06, p = .0003, and self-efficacy, Effect=-0.18, SE=0.06, p = .003, were all significant (see Figure 1).

Treatment choice

In other pre-registered analyses, all of the measured variables assessed in relation to the pharmacist differentiated between the individuals who would choose to see their pharmacist versus those who would not, in at least 1 of the 3 conditions. In general, perceptions of pharmacists had a more consistent impact on treatment choice than perceptions of GPs (see Table 3).

Respect (for conjunctivitis), trust (for conjunctivitis), liking (for conjunctivitis and contact dermatitis), warmth (for influenza and potentially conjunctivitis given the main effect), competence (potentially for conjunctivitis and contact dermatitis given the main effects), assertiveness (for conjunctivitis and contact dermatitis) and morality (for conjunctivitis) of pharmacists, as well as rating pharmacists as less rude/impolite (for influenza) all increased the likelihood of participants choosing to see their pharmacist. In addition, rating seeing the pharmacist as less of a hassle (for all conditions), having greater self-efficacy to see the pharmacist (for conjunctivitis and contact



Figure 1. Parallel mediation of GP vs. pharmacist on recommendation for advice and support. *Note.* Coefficients presented are unstandardized (standard error). *p < .05; **p < .01; ***p < .001.

dermatitis), having visited their pharmacist more in the last 2 years (for conjunctivitis) and recommending their pharmacist more highly (potentially for all three conditions) also increased the likelihood that participants would choose to see their pharmacist.

For GPs, liking (for contact dermatitis), warmth (for conjunctivitis and contact dermatitis), competence and assertiveness (for conjunctivitis) each increased the likelihood of choosing to see their GP. In addition, rating seeing the GP as less of a hassle and having seen their GP more often in the last 2 years (for conjunctivitis and influenza) and having more self-efficacy to see their GP and recommending their GP more highly (for conjunctivitis and contact dermatitis) also increased the chances that participants selected seeing their GP as their most likely response. Those who chose to see their GP rated their GPs similarly to those who chose the other three response options (see their pharmacist, do nothing or call 111) on respect, trust, morality, and rudeness/politeness of their GP.

Non-registered analyses

To try to understand participants choosing to see pharmacists more often than GPs for minor conditions, respect, Effect = 0.05, SE=0.02, p = .03, hassles, Effect = -0.38, SE=0.06, p < .0001, and self-efficacy, Effect = -0.40, SE=0.06, p < .0001, were all significant mediators in single mediator models. When entered together, hassles, Effect = -0.21, SE=0.07, p = .003, self-efficacy, Effect = -0.24, SE=0.07, p = .0005, but not respect, Effect = 0.02, SE=0.01, p = .12, were significant mediators (see Figure 2).

Treatment choice was unrelated to education (awarded a full university degree: yes/no), student status, being registered with a GP practice (yes/no) or having a regular GP (yes/no) for all three conditions. Of the demographic variables recorded, none were associated with treatment choice across all three conditions (see Table S1).

Having a regular pharmacist (yes/no) was associated with treatment choice for influenza and contact dermatitis (but not conjunctivitis). Those with a regular pharmacist were more likely to see their pharmacist for influenza than those without a regular pharmacist but more likely to contact their GP than those without a regular pharmacist for contact dermatitis. Those without a regular pharmacist were more likely than those with a regular pharmacist to do nothing for both influenza and contact dermatitis.

Table 3. M	leans a	and standa	rd deviat	ions of m	easures â	icross ead	ch scenario	and cho	ice $(N=3)$	29).						
			Scenari	o 1: Conjune	ctivitis			Scenar	io 2: Influer	ıza		0,	Scenario 3:	Contact Der	matitis	
					111				No	111					111	
Measure	GP/P	GP <i>n</i> = 90	P n=179	No <i>n</i> =40	n = 20	Ŀ	GP $n = 47$	P <i>n</i> =76	<i>n</i> = 184	n = 22	ч	GP <i>n</i> = 79	P <i>n</i> =151	No <i>n</i> =48	n=51	ч
Respect	ß	5.74 (1.21)	5.69	5.30	5.75	1.31	5.70 (1.30)	5.80	5.59	5.68	0.56	5.63 ^{1,2}	5.67 ^{1,2}	5.38 ¹	5.94 ²	2.51 ^W
			(1.22)	(1.44)	(1.25)			(1.30)	(1.24)	(1.04)		(1.17)	(1.39)	(1.21)	(0.88)	
	٩	5.14 ² (1.40)	5.701	5.15 ^{1,2}	5.70 ^{1,2}	5.63***	5.26 (1.42)	5.71	5.43	5.59	1.57	5.25 (1.46)	5.63	5.29	5.59	1.91 ^w
			(1.10)	(1.29)	(0.98)			(1.29)	(1.16)	(1.05)			(1.14)	(1.29)	(0.96)	
Trust	GP	5.59 (1.19)	5.51	4.97	5.60	2.37	5.60 (1.30)	5.68	5.32	5.73	1.98	5.541,2	5.46 ^{1,2}	4.98 ¹	5.84^{2}	3.93**
			(1.31)	(1.44)	(1.10)			(1.31)	(1.29)	(1.12)		(1.22)	(1.37)	(1.19)	(1.12)	
	٩	5.32 ^{1,2}	5.62 ¹	5.05^{2}	5.70 ^{1,2}	3.27*	5.51 ^{1,2}	5.781	5.33^{2}	5.59 ^{1,2}	2.61	5.39 (1.37)	5.55	5.17	5.67	1.79
		(1.31)	(1.15)	(1.28)	(0.98)		(1.23)	(1.25)	(1.20)	(1.01)			(1.19)	(1.24)	(0.93)	
Like	G	5.17 (1.34)	5.15	4.70	4.80	1.57	5.34 (1.42)	5.20	4.94	5.23	1.49	5.28 ¹	5.09 ^{1,2}	4.52 ²	5.24 ^{1,2}	3.54*
		,	(1.36)	(1.51)	(1.20)			(1.41)	(1.35)	(1.19)	;	(1.33)	(1.46)	(1.17)	(1.19)	:
	٩	4.77 ² (1.29)	5.26^{1}	4.72 ^{1,2}	4.751,2	4.41**	4.94 (1.42)	5.34	4.90	5.18	2.09 ^w	4.97 ^{1,2}	5.16 ¹	4.67 ²	5.06 ^{1,2}	2.48 ^W
			(1.28)	(1.15)	(1.02)			(1.39)	(1.14)	(1.47)		(1.51)	(1.26)	(1.04)	(1.05)	
Warm	G	5.20 ¹ (1.28)	4.94 ^{1,2}	4.40 ²	4.95 ^{1,2}	2.96*	5.28 (1.38)	4.97	4.82	5.23	1.66	5.061	5.00 ¹	4.38 ²	5.14 ¹	3.18*
			(1.49)	(1.50)	(1.43)			(1.45)	(1.44)	(1.27)		(1.43)	(1.45)	(1.32)	(1.37)	
	٩	4.71 (1.54)	5.08	4.47	4.90	2.68*	4.79 ^{1,2}	5.33 ¹	4.70 ²	5.27 ^{1,2}	4.11**	4.85 (1.63)	5.02	4.52	4.96	1.52
			(1.43)	(1.36)	(0.97)		(1.57)	(1.55)	(1.32)	(1.45)			(1.42)	(1.24)	(1.37)	
Competent	GP	5.77 ¹ (1.18)	5.57 ^{1,2}	5.13 ²	5.60 ^{1,2}	2.43	5.70 (1.23)	5.63	5.50	5.68	0.48	5.541,2	5.58 ^{1,2}	5.21 ¹	5.94^{2}	2.85*
			(1.25)	(1.44)	(1.14)			(1.31)	(1.27)	(1.13)		(1.24)	(1.34)	(1.09)	(1.10)	
	٩	5.31 (1.35)	5.69	5.25	5.60	2.89 ^{w*}	5.34 (1.24)	5.83	5.45	5.55	2.44	5.32 (1.34)	5.64	5.25	5.78	3.10*
			(1.09)	(1.08)	(0.82)			(1.18)	(1.13)	(1.06)			(1.10)	(1.18)	(0.97)	
Assertive	GP	5.62 ¹ (1.10)	5.45^{1}	4.90^{2}	5.30 ^{1,2}	3.69*	5.47 ^{1,2}	5.72 ¹	5.26^{2}	5.68 ^{1,2}	3.35*	5.39 ^{1,2}	5.55 ¹	5.00 ²	5.49 ^{1,2}	2.77*
			(1.21)	(1.15)	(1.08)		(1.08)	(1.15)	(1.21)	(1.00)		(1.13)	(1.22)	(1.11)	(1.12)	
	٩	4.78 ² (1.36)	5.28 ¹	4.58^{2}	4.95 ^{1,2}	5.70***	4.96 (1.30)	5.36	4.91	5.14	2.42	4.73 ²	5.28 ¹	4.79 ^{1,2}	5.00 ^{1,2}	4.01** ^w
			(1.17)	(1.15)	(1.00)			(1.29)	(1.18)	(1.28)		(1.45)	(1.14)	(1.28)	(1.02)	
Moral	ß	5.70 (1.14)	5.54	5.15	5.35	2.27	5.62 (1.10)	5.70	5.44	5.45	1.02	5.58 (1.02)	5.53	5.21	5.73	1.78
			(1.15)	(1.25)	(1.04)			(1.26)	(1.13)	(1.14)			(1.29)	(66.0)	(1.08)	
	٩	5.23 ^{1,2}	5.50 ¹	4.90^{2}	5.35 ^{1,2}	3.35*	5.17 (1.22)	5.64	5.26	5.45	2.46	5.27 (1.31)	5.41	5.06	5.55	1.73
		(1.28)	(1.13)	(1.08)	(66.0)			(1.29)	(1.11)	(0.96)			(1.15)	(1.10)	(1.06)	
Recommend	ß	5.21 ¹ (1.55)	5.06^{1}	4.30^{2}	4.70 ^{1,2}	3.55*	5.34 (1.51)	5.17	4.79	5.23	2.30	5.18 ¹	4.98 ^{1,2}	4.31 ²	5.33 ¹	4.25**
			(1.57)	(1.62)	(1.38)			(1.52)	(1.61)	(1.51)		(1.44)	(1.64)	(1.39)	(1.52)	
	٩	4.79 ² (1.55)	5.36 ¹	4.65 ²	4.80 ^{1,2}	5.06**	4.83 (1.67)	5.47	4.98	5.09	2.68*	4.85 (1.64)	5.21	4.75	5.37	2.69*
			(1.41)	(1.17)	(1.24)			(1.43)	(1.36)	(1.48)			(1.46)	(1.21)	(1.15)	
Hassle	G	3.88 ¹ (1.79)	4.51^{2}	4.72 ^{1,2}	4.95 ^{1,2}	3.64*	3.72 ¹	4.17 ^{1,2}	4.69 ²	4.05 ^{1,2}	4.34**	4.15 (1.83)	4.47	4.92	4.02	2.52
			(1.93)	(1.59)	(1.64)		(1.80)	(1.93)	(1.77)	(2.08)			(1.91)	(1.67)	(1.82)	
	٩	3.22 ² (1.52)	2.53 ¹	3.50 ²	4.00^{2}	10.82***	3.32 ²	2.38 ¹	3.07 ²	2.77 ^{1,2}	4.77**	3.24^{2}	2.541	3.38 ²	3.14 ^{1,2}	5.97***
			(1.46)	(1.62)	(1.49)		(1.56)	(1.31)	(1.61)	(1.66)		(1.70)	(1.47)	(1.44)	(1.51)	

(Continued)

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Table 3. Continued.

			Scenari	o 1: Conjunc	tivitis			Scenar	io 2: Influer	ıza			Scenario 3:	Contact Der	matitis	
					111				No	111					111	
Measure	GP/P	GP $n = 90$	P <i>n</i> =179	No <i>n</i> =40	n = 20	ч	GP <i>n</i> =47	P <i>n</i> =76	<i>n</i> = 184	n = 22	F	GP <i>n</i> = 79	P <i>n</i> =151	No <i>n</i> =48	n = 51	ч
Self-Efficacy	G	4.89 ¹ (1.28)	4.06 ²	4.24 ^{1,2}	4.10 ^{1,2}	6.46***	4.79 (1.37)	4.23	4.22	4.34	2.14 ^W	4.77 ¹	4.18 ²	3.81 ²	4.45 ^{1,2}	4.75**
			(1.53)	(1.69)	(1.71)			(1.40)	(1.58)	(1.80)		(1.39)	(1.56)	(1.66)	(1.38)	
	٩	5.27 ² (1.10)	5.771	4.93^{2}	4.90^{2}	12.93*** ^w	5.33 ^{1,2}	5.84^{1}	5.35^{2}	5.59 ^{1,2}	3.76*	5.44^{1}	5.731	4.85^{2}	5.35 ^{1,2}	8.10***
			(1.13)	(0.98)	(0.70)		(1.09)	(1.01)	(1.17)	(1.06)		(1.16)	(1.05)	(1.20)	(1.03)	
Rude/	GР	2.49 (1.49)	2.61	2.95	2.65	0.83	2.85 (1.62)	2.29	2.75	2.16	2.62	2.51 ^{1,2}	2.73 ^{1,2}	2.91 ¹	2.20 ²	2.51* ^W
Impolite			(1.66)	(1.30)	(1.20)			(1.60)	(1.54)	(1.07)		(1.39)	(1.74)	(1.39)	(1.25)	
	٩	2.67 (1.63)	2.20	2.63	2.53	2.40	3.16^{2}	1.96^{1}	2.41 ²	2.18 ^{1,2}	5.47** ^w	2.54 (1.66)	2.20	2.78	2.41	2.19
			(1.47)	(1.38)	(1.19)		(1.79)	(1.34)	(1.43)	(1.34)			(1.46)	(1.43)	(1.36)	
Past Behaviour/	GР	5.47 ¹ (5.09)	3.27 ²	2.24^{2}	2.45 ²	8.54*** ^w	5.15 ¹	3.43 ^{1,2}	3.47 ²	3.41 ^{1,2}	2.78*	3.97 (3.37)	3.61	3.46	3.76	0.24
Pharmacist GP visits			(2.92)	(2.43)	(2.52)		(4.47)	(3.78)	(3.39)	(4.35)			(4.04)	(3.15)	(4.00)	
	٩	1.02 ^{1,2}	1.50 ¹	0.48^{2}	0.60^{2}	7.69 *** W	1.38 (1.91)	1.57	1.04	0.73	1.89	1.44 (1.91)	1.09	1.19	1.12	0.61
		(1.50)	(2.29)	(0.91)	(1.05)			(2.47)	(1.75)	(1.20)			(1.95)	(2.32)	(1.54)	
Note Significant	differ	ances from I	Bonferroni	nost-hor te	icts are in	dirated who	re condition	s do not sh		arcrint for	· a cnerifir	W MASSING W	- Walch's	E due to vi	olating th	-pmod e

Note. Significant differences from Bonferroni post-hoc tests are indicated where conditions do not share a superscript for a specific measure. ^w = Welch's *F* due to violating the homo-geneity of variance assumption. Where applicable, these tests have been followed up with Games-Howell post-hoc tests. p < .01. p < .01. p < .001. p < .001. GP = general practitioner in the measure and GP/P columns but 'Make an appointment with your GP' in the other columns; P = pharmacist in the GP/P column but 'Visit your local pharmacist' in the other columns; No = 'Hope it goes away by itself'; 111 = 'Call 111'.



Figure 2. Parallel mediation of GP vs. pharmacist on treatment choice. *Note.* Coefficients presented are unstandardized (standard error). * p < .05; ** p < .01; *** p < .01.

Age differed across treatment choice for conjunctivitis only; those indicating they would call 111 were significantly younger than those who would see a pharmacist.

A much higher proportion of participants reporting their gender as female or woman responded that they would see their pharmacist for conjunctivitis and contact dermatitis compared to those who did not report their gender as female or woman. They were less likely to choose to call 111 or see their GP for both conditions.

Ethnicity (white: yes/no) was associated with treatment choice for conjunctivitis and influenza but not contact dermatitis. For conjunctivitis, much higher proportions of those whose ethnicity was white (vs. non-white) would choose to see their pharmacist; much higher proportions of those whose ethnicity was not white (vs. white) would choose to see their GP. For influenza, again, higher proportions of those whose ethnicity was not white (vs. white) would choose to see their GP. For influenza, again, higher proportions of those whose ethnicity was not white (vs. white) would choose to see their GP; in addition, those whose ethnicity was white (vs. not white) were more likely to state that they would hope it went away by itself.

ANCOVAs were conducted to check that the findings reported in Table 3 were robust when accounting for covariates associated with treatment choice. Details regarding these analyses are reported in Online Supplementary Materials 1.

Discussion

Aggregated across three minor conditions, individuals were more likely to choose to see their pharmacist than their GP. Mediation analyses suggested that this effect was attributable, primarily, to having greater self-efficacy to see a pharmacist and experiencing fewer hassles compared to seeing their GP though respect also played a role in single mediator models. These three constructs also mediated a non-significant difference in the extent to which individuals would recommend their GP and pharmacist with effects of opposing signs (fewer hassles and greater self-efficacy favouring pharmacists; respect favouring GPs). When considering the three minor conditions separately, cognitions relating particularly to the pharmacist including respect, liking and trust differentiated between individuals who selected different treatment choices. GPs being respected more than pharmacists (as well as for trust) was mediated by greater perceived assertiveness and morality of GPs than pharmacists. GPs and pharmacists were similarly trusted and liked as each other, seen as similarly warm and competent, and were equally likely to be recommended.

Contribution to the current literature

The finding that people in the UK are more inclined to see their pharmacist than their GP for minor medical conditions is consistent with recent surveys (e.g. Duxbury et al., 2023) albeit for different conditions. This finding was consistent across all three conditions although doing nothing was the most popular response for influenza; seeing a pharmacist was most popular for conjunctivitis and contact dermatitis. The findings build on previous survey work, however, by indicating that fewer hassles and increased self-efficacy in seeing a pharmacist represent viable pathways from experiencing minor conditions to choosing to see their pharmacist to discuss and treat minor medical conditions should further help shift patients from GPs to seeing their pharmacist directly. Increasing awareness of these roles that pharmacists can provide is also likely to be important given around a third of people are unaware of such services (Duxbury et al., 2023; see also Paloumpi et al., 2024).

Psychological factors beyond self-efficacy and hassles were found to play a role in treatment decisions. Those who chose to see a pharmacist for at least one of three minor medical conditions rather than make other choices such as to see their GP or do nothing had greater respect, liking and trust for their pharmacist. This is consistent with previous work indicating that distrust and dislike of healthcare professionals are sometimes reasons for avoiding seeing a healthcare professional (e.g. Kannan & Veazie, 2014). Attempts to increase liking and trust for pharmacists and, in particular, respect given pharmacists were found in this study to be respected less than GPs, might encourage patients to see their pharmacist more often for minor conditions.

The MAC model (Prestwich et al., 2021) has recently been developed to identify the factors underpinning how much individuals are respected. The current study presents a unique test of the model in a health context to try to identify the factors that influence not only how much GPs and pharmacists are respected but also trusted. As such, the study provides a novel test and extension of the MAC model. Consistent with the MAC model (Prestwich et al., 2021), morality and assertiveness were found to mediate the differences in respect between GPs and pharmacists. Attempts to enhance how moral (e.g. recommending the most appropriate medicine rather than the one that is the most profitable and ensuring confidentiality, Allinson & Chaar, 2016; Paloumpi et al., 2024) and assertive (e.g. training to ensure confident interactions and assertiveness when diagnosing and recommending treatments for specific conditions) pharmacists are perceived to be, on the basis of these findings, should be particularly helpful for building respect and, in light of the results of the mediational models presented in relation to Hypothesis 2, also trust.

Although competence did not mediate the differences in respect or trust for GPs versus pharmacists, this does not necessarily mean that competence is not important. For example, Allinson and Chaar (2016) argue that being competent both in terms of knowledge and social/communication skills are important for building trust in pharmacists. However, differences in respect and trust between GPs and pharmacists can be mediated by other differences - in this study, assertiveness and morality. Competence did not mediate the differences in respect for GPs versus pharmacists because GPs and pharmacists were viewed as similarly competent. Similarly, warmth did not mediate the effects on trust (nor respect, though this was expected on the basis of the MAC model) with GPs and pharmacists seen to be similarly warm.

Further work is needed to identify ways in which pharmacists can be respected and trusted more. Connolly Gibbons et al. (2023) have demonstrated that feeding back to therapists how much their patients respected/trusted them can result in therapists being respected/trusted more than therapists who do not receive this feedback. They argue this could be due to the intervention causing therapists to say or do something different that promoted respect/trust. Evidence suggests that adhering to national healthcare professional communication guidelines can enhance both respect and trust for healthcare professionals *via* enhancing perceptions of competence and/or morality (Prestwich et al., in press). Future research should design and develop such communication-based strategies for pharmacists to increase how much they are respected and trusted and, in turn, test whether these lead to patients choosing to consult with pharmacists first when experiencing symptoms of minor medical conditions.

Although the sample comprised a relatively small proportion of participants whose ethnicity was not white, there was evidence that individuals of white ethnicity may be more inclined to consult with a pharmacist regarding minor medical conditions compared to individuals whose ethnicity is not white (see Table S1). Policymakers, healthcare professionals and interventionists need to consider how strategies that are designed to enhance the role of pharmacists do not, inadvertently, widen health inequities. Moreover, the findings of the current study were consistent with prior work, in the context of managing longer-term health conditions, indicating that females are more favourable to pharmacy services and more likely to choose to see pharmacists over doctors for their treatment (e.g. Tinelli et al., 2011; Gerard et al., 2012). The current study also identified that older people were relatively less inclined to use the 111 phone service (compared to seeing their pharmacist). Taken together, these findings support and extend prior work by indicating important demographical differences in patient choices. Such findings suggest that targeted approaches in marketing are needed to encourage, for example, males and individuals whose ethnicities are not white to utilize pharmacies more and older people to use the 111 service as approaches to reduce demand on GP services. Attempts to bolster respect for pharmacists, as well as perceptions regarding self-efficacy and hassles, particularly in the groups who were least likely to report that they would choose to see a pharmacist, may be warranted. Larger scale studies, however, are needed to more robustly verify such trends and experimental studies attempting to manipulate these determinants of treatment choices are needed.

This study provides important insights regarding the factors that influence patients' treatment decisions for minor medical conditions. This research is particularly timely given long waiting times and the resulting impact on low satisfaction levels with the UK NHS (Jefferies et al., 2024). Moreover, the research provides important theoretical contributions around the bases of respect and trust. This includes the study providing a novel test of the MAC model (Prestwich et al., 2021) in a health context. Nevertheless, there are limitations.

Limitations

First, the research only considered a few minor medical conditions and findings varied somewhat across them. For example, the influenza scenario yielded relatively fewer differences across conditions. Relatively few participants chose to see their GP or pharmacist for influenza, presumably because it is so common and patients generally have had experience of these symptoms in the past. A consequence of this is that statistical power to detect differences across either the GP or pharmacist cells would have been adversely affected. Second, given the Pharmacy First service recently launched in the UK enabling patients to see pharmacists, without referral, for seven common conditions, further research specific to these seven conditions is needed. Nevertheless, the current study provides a useful starting point and such vignette-type approaches could be used to gauge the acceptability of a broader pharmacy-based scheme that covers chronic conditions such as diabetes¹ and attempts to identify factors associated with patients' willingness to use them. Third, the scenarios used, while internally valid and likely familiar to many patients, are hypothetical. Fourth, most of the constructs were assessed with single items and did not use validated scales. However, similar scales have been used in related work previously (e.g. Prestwich et al., 2021), the items appeared face valid and there is no consensus regarding how best to measure concepts like trust (Richmond et al., 2024). Fifth, although many countries are tackling similar issues regarding satisfaction with, and access within, national health systems (e.g. STADA, 2024), it is not known how the study findings would generalize to different countries that operate different healthcare systems. The current study recruited UK nationals living in the UK and even within the current sample, there were potentially important demographical differences in treatment decisions (e.g. those who reported their ethnicity as white were more likely to choose to see their pharmacist than those who reported their ethnicity as non-white). As such, important cultural factors may influence treatment choices and hinder the generalizability of the current findings. Moreover, the sample were specifically recruited online and, although the sample was relatively representative of the wider population in England and Wales, for example in terms of median age and ethnicity (e.g. current sample = 39 years and 87% white vs. nationally = 40 years and 82% white, Office for National Statistics, 2022, 2023), individuals who volunteer for online studies may differ to those who do not. Nevertheless, online studies can produce findings consistent with studies that recruit participants through more traditional means (e.g. Gosling et al., 2004).

This study presents an original test of the psychological factors that influence patients' treatment decisions for minor conditions. While finding that patients generally are twice as likely to see their pharmacist than their GP across three minor medical conditions is promising, a large proportion of patients are still indicating that seeing their GP would be their most likely response. Hassles and self-efficacy are important factors that influence treatment choices and reducing hassles and building self-efficacy in seeing pharmacists for minor medical conditions further could be effective in increasing the popularity of choosing a pharmacist over a GP. Evaluations of pharmacists- such as how much they are respected and trusted- and the perceptions underpinning such evaluations (such as how moral and assertive they are perceived to be) represent additional, modifiable factors that interventions can target in the future to continue to shift patients from GPs to pharmacists for the treatment of minor medical conditions.

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Disclosure statement

The authors report there are no competing interests to declare.

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